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THE ECONOMIC IMPACT OF THE SHEEP INDUSTRY IN SOUTH DAKOTA

by

Dr. Gary Taylor¹
Assoc. Professor of Economics



ABS 482 CLASS EXPERIENCES IN SOUTH AMERICA (BRAZIL AND ARGENTINA)

by

Dr. Martin Beutler²
Professor of Economics

The sheep industry in South Dakota makes a significant contribution to economic development in the state. There were 340,000 sheep and lambs in South Dakota on January 1, 2008. During 2008 the 220,000 ewes produced 265,000 lambs and the industry produced \$27,274,000 in gross income (South Dakota Agriculture 2009). This amount was added to the \$1,987,000 in wool income and \$840,000 in shearing income along with an additional \$12,800,000 in wool and sheep marketing activity excluded from NASS census data (Held). These amounts are the economic activity in the sheep industry that occurs outside the traditional marketing channels. This brings the total gross income for the sheep industry in 2008 to \$42,901,000.

Methodology

IMPLAN Pro 3 software was used to estimate the impact of the sheep industry on the economy of the state of South Dakota. This software was originally developed for the National Forest Service and has been adapted for commercial use. The economic relationships among industries in South Dakota are the internal production functions imbedded within the program. After constructing a baseline model of the state, the impact of the sheep
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In the spring of 2010, an SDSU ABS 482 Class sponsored by the CHS Foundation Global Business Leadership Program co-sponsored 11 students, 7 Ag professionals and 2 faculty members to visit the countries of Argentina and Brazil. Group leaders were Dr. Richard Shane, class instructor, and Dr. Martin Beutler. Ag professionals included community and business leaders representing SD Wheat Growers, SD Grasslands Coalition, DairyNet, Inc., and SD Department of Ag.

Objectives of the Trip

1. To learn about food system organization and operation, business practices, alternative energy sources, horticultural practices, and other contemporary business practices in Brazil and Argentina as well as along transportation routes in the USA.
2. To help SDSU students meet two SDSU educational goals: a) be competitive in an international context and b) be globally informed and prepared for a diverse world.
3. Be knowledgeable about the state of the world (especially South America) socially, culturally, politically, and economically which leads to a better understanding and appreciation for diversity.

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¹Contact the author at gary.taylor@sdstate.edu or 605-688-4141.

²Contact the author at martin.beutler@sdstate.edu or 605-394-2236.

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 sector is analyzed to determine its impact on the state economy.

Analysis of the Sheep Sector

The IMPLAN model breaks down the effects of the sheep sector into three categories, the direct, indirect, and induced. The direct effect is the value of the products produced in the sheep sector: lambs, cull animals and wool. The indirect effect is the business to business activity in the industry, and the induced effect is the increase in household spending resulting from the increased economic activity in the state. These effects for 2008 are shown in Table 1.

Table 1. Sheep Industry Output Impact

Direct	\$42,901,000
Indirect	\$10,732,257.8
Induced	\$2,891,864.5
Total	\$56,525,122.3

In nominal dollars

The multiplier for the sheep industry is 1.32, meaning that one dollar of output in the industry generates an additional thirty-two cents of economic activity in the South Dakota economy. This total impact, when divided by the 220,000 ewes in the state in 2008 would result in \$256.93 in economic activity per ewe from the sheep production sector. This impact can also be examined different ways. If we divide the same output level by the 340,000 head of sheep and lambs the impact is \$166.25 per head. If we divide the output by the 265,000 lambs born in 2008 the impact is \$213.30 per lamb.

The employment effects are similar to the output effects. The direct effect is the number of people employed in the sheep production industry. The indirect effect is the increase in the number of people employed by the industries supplying inputs to the sheep industry, and the induced effect is the employment resulting from the additional economic activity in the state. The employment effects are in Table 2.

The indirect business taxes are all of the taxes collected (sales, property, excise, etc.) The direct effect is the tax revenue generated by the sheep industry, the indirect effect results from the

increased business to business activity, and the induced effect is from the increased consumer activity associated with sheep production in the state. The relative amount of taxes paid at each level is representative of the changes in the type of taxes paid by agricultural producers, supply industries, and consumers. The tax results are in Table 2.

Table 2. Employment and Indirect Business Tax Impacts

	<u>Employment</u>	<u>Taxes</u>
Direct	387.1	\$1,290,425
Indirect	59.6	\$422,022
Induced	28.3	\$178,292
Total	475	\$1,890,739

In nominal dollars

As we can observe in Table 3, approximately 80% of the economic impact from the sheep industry stays in the agricultural sector. The next largest impact is in the manufacturing sector and is only 5%.

Table 3. Sheep Impact by Sector of the Economy

Ag, Forestry, Hunting	\$ 5,154,995.7
Manufacturing	3,074,987.5
Trade	1,520,731.3
Services	1,527,180.9
Insurance, Finance, Real estate	2,482,175.9
Mining, construction	1,058,598.6
Education, Government	413,800.9
Transportation, Warehouse	769,478.4
Misc	523,173.1
Total	\$56,525,122.3

Feed Consumption

Another significant impact of the sheep industry is supplying a local market for the corn, soybeans, and forages produced in South Dakota. For this analysis it is assumed that the breeding herd is on pasture for 6 months of the year. The remainder of the year it is assumed that each of the 270,000 head in the breeding herd will consume 1,000 lbs of hay, 120 lbs of corn, and 45 lbs of soybean meal during the winter (Sheep Pocket Guide). This would result in consumption of 578,572 bushels of corn, 135,000 tons of forage, and 6,075 tons of soybean meal equivalents. In addition, the 247,269 head of lambs marketed would consume an

additional 1,192,190 bushels of corn, 7,418 tons of soybean meal, and 14,836 tons of forage (Held, 2006).

References

- South Dakota Agriculture 2009. South Dakota Agricultural Statistics Service. Bulletin No. 69, June, 2009.
- Personal communication with Jeff Held, June 2, 2010.
- Held, Jeffrey. Using DDGS in Mixed Lamb Diets. South Dakota State University Extension, ExEx 5053, 2006.
- Sheep Pocket Guide. North Dakota State University Extension, AS-989. May 1996.

(ABS482 Class Experiences... Cont'd from p.1)

4. To have some fun while learning about the South American culture, etc.

Focus

The focus of the trip included:

1. Food Systems, agricultural enterprises and global entrepreneurship.
2. Environmental issues, alternative energy policies and options.
3. An understanding of history, cultural diversity, and the way of life in Brazil and Argentina today. How is living in South America different from living in South Dakota and what are the advantages and disadvantages of both cultures?

Student Preparation & Responsibilities

As part of participating in this experience:

1. Students were required to attend weekly classes where guest lecturers helped prepare students for foreign travel. Presentations included travel tips, monetary needs, accommodations, visa requirements, cultural do's and don'ts etc.
2. Students were required to keep of a journal documenting what they learned and experienced while traveling.
3. Students gave pre- and post-trip presentations on: the agriculture, social structure, and culture of the two countries.

Travel Destinations, Places Visited

Before the South American adventure began, travelers stopped in Houston, TX for a visit to the Port of Galveston and the CHS port facilities. Students viewed the unloading of urea from a ship (from Hong Kong) whose cargo originated from Qatar. They toured the facility while asking questions of one of the facilities managers. A unit train of urea had recently been shipped to Watertown, SD.

In Argentina, participants' main base of operations was the capital city of Buenos Aires. The first tour was to the Areco City Fertilizer and Chemical Distributor and to a nearby soybean field in the city of San Antonio de Areco. Next on the agenda were visits to the Bunge Crushing Plant, Terminal 6, on the Parana River and the adjacent eco fuel and biodiesel facilities. The group also visited the Rosario City Grain Board Exchange, which is similar to the Chicago Board of Trade. In addition, there was a guided tour of Buenos Aires and a visit to Estancia Cinacina, a Gaucho (cowboy) tourist ranch where they were treated to a demonstration of skill by the Gauchos and a great barbeque.

In Brazil the group visited the cities of Sao Paulo, Piracicaba, Santos and Rio de Janeiro. Tours included the Usina São João sugarcane operation producing ethanol and sugar products and the University of São Paulo, "Luiz de Queiroz" College of Agriculture. Breathtaking vistas appeared around every corner as the group went by motor coach along the Brazilian coast to Rio de Janeiro. The tour ended with the beaches of Rio, Copacabana and Ipanema.

Student Quotes on Places Visited

"We saw a large cargo ship being unloaded. It was carrying urea... It was an interesting process to see as the size and storage space was magnificent."

"We toured the largest soybean processing plant in Argentina." "The main crop of Argentina is soybeans which accounts for 70% of total Argentina grain production."

"...the facilities were so large you could see easily the layout from Google Earth."

"Four byproducts including glycerin were produced at the plant. It was really cool to see how

they ...structured everything to maximize value added.”

With respect to a tour of a sugar cane plantation in Brazil; “We were able to see sugar cane up close and even see the mechanical harvest today. For years, sugar cane has been harvested manually with lots of labor but, that is changing. A machine that similar to a combine ...went thrashing through the fields and put the canes in the trailers of the accompanying tractor. It was fun to eat the cane.”

(The presenter said) “In terms of ethanol production, it is far better than corn. Economically the breakeven point for ethanol for the price of a barrel of oil is \$40... but all that depends on the price of corn.”

“One crop (*of cane*) can last, 6-7 seasons.”

“Brazil is one of the few countries left in the world that has so much unused land currently.”

Other Student Quotes

“The people from the International Plant Nutrient Institute did a great job in taking us to see agricultural production and processing in Argentina and Brazil.”

“Having taken this class and getting a once-in-a-lifetime experience to travel to both Argentina and

Brazil, I will encourage others to visit these countries.”

“Traveling in these foreign countries was eye opening. We will never forget what we saw, drank, and ate. Hopefully, we will be able to return one day.”

Summary

Providing travel-study opportunities for our youth to visit and learn about agricultural production and marketing practices in countries that compete with South Dakota in the world market increases their realization of the impact those countries have on our own. Students learn that producers all over the world are seeking much the same personal and business goals as U.S. producers. Appreciation for the thought processes and cultural aspects of food and fiber production outside the U.S. will help prepare our youth for future opportunities and challenges they will face as Ag professionals

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Department of Economics
South Dakota State University
Box 504 Scobey Hall
Brookings, SD 57007-0895
Phone: 605-688-4141
Fax: 605-688-6386
E-Mail: Penny_Stover@sdstate.edu
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Brookings, SD 57007-0895
Box 504
Economics Department

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