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1-1-2009

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Peck, Clint, "Feeding the World, Challenges and Opportunities for the U.S. Beef Industry" (2009). *Range Beef Cow Symposium.* Paper 267.
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Proceedings, The Range Beef Cow Symposium XXI
December 1, 2, and 3 2009, Casper, WY

Feeding the World, Challenges and Opportunities for the U.S. Beef Industry

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Nobody ever said the beef business was going to be easy. But, who knew even 10 years ago how complicated it would be to raise a calf and get it sent off to market. Few could have predicted there would be raging debates over animal welfare and animal rights or "food vs. fuel."

Not long ago the most intense pressure facing cattle ranchers came while slugging it out for market share with chicken. For 20 years we lost so much market share to a burgeoning and highly-integrated poultry industry that we began shifting the nucleus of the U.S. beef industry from "commodity" production to "program" production.

While we're being asked to provide increased supplies of wholesome, safer food at more affordable prices, outside observers scrutinize and criticize how we operate. They challenge us to produce beef in ways that re-define animal husbandry, genetic science and environmental safety.

Meanwhile, global population is streaming away from the farm to the cities and with this demographic shift comes increased horizontal and vertical integration in food production and food distribution. Consequently, consumers are increasingly confused and ignorant as to where their food comes from. But, paradoxically, consumers globally are also demanding a stronger voice in how food is produced who produces it.

And, relentless throughout in the food chain is the trend toward globalization. The Doha Round of trade negotiations of the World Trade Organization (WTO) was labeled the "development round" – a key aim of which is to increase developing countries' access to developed-country agricultural and processed food markets.[1]

The Global Beef Agenda

In 2001, World Trade Organization (WTO) members, including the U.S., met in Doha, Qatar and agreed to increase global trade through better market access. The U.S. position has been to not only to help its farmers and ranchers export more, but also to improve the lives of producers and consumers in the developing world and around the globe.[2]

Also, new rules for sanitary and phytosanitary (SPS) measures and the Technical Barriers to Trade Agreements are beginning to gain a toehold in global trade.

Meanwhile, global meat consumption from 1960 through 2005 changed dramatically. Beef consumption increased on average 1.8% per year, pork 3.3%, and poultry 5.0% per year. Over the past 10 years, global beef production has increased 24% or 16 billion pounds. World population has also increased 78 million people per year and over the next decade we can expect to add 1 billion more global consumers.[3] The question is: Will they eat beef?

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[1] Steve McCorriston, University of Exeter, UK; Ian Sheldon, Ohio State University, USA. Globalization and Food Industry Consolidation: What Does Industrial Organization Have to Say About Market Access? First Biennial Research Conference, Food System Research Group June 26-27, 2003, University of Wisconsin-Madison.

[2] USDA, Foreign Agricultural Service, "What is U.S. Agricultural Trade Policy?" http://www.fas.usda.gov/itp/policy/whatis.asp

[3] Randy Blach, Executive Vice President, Cattle-Fax, Proceedings of the 2008 International Livestock Congress, "Global Beef Opportunities: Blazing New Trails"

Global beef markets will increasingly be consumer-driven with product safety, wholesomeness, quality, and price being key determinants of international competitiveness. Processors, retailers, and food service corporations will continue to consolidate, expand and integrate the global beef market. Everything else being equal, production efficiency and lower-cost protein for both developed and developing countries around the world will result.

Where The Cattle Are…

The dynamics of global competition in the beef industry pivots around where the cattle are raised and the beef produced. But, cattle populations notwithstanding, productivity in terms of beef products produced within the confines of a national cowherd plays a significant role in the competitive advantages.

Brazil leads the way with a commercial cowherd estimated at 175-190 million head. Since the early 1990s, Brazil's national cattle herd has grown at the rate of about 5 million head per year. Today in Brazil 70% of an estimated 180-190 million cattle are raised in the hot and humid tropical regions of the sub-Amazon *cerrado*. This vast region commands a dependence on *Bos indicus* breeds – mostly Zebu cattle types.

The Chinese cattle industry today groups domestic bovines into yellow cattle, dairy cattle, water buffalo, and yak. Historically, every farmer had a cow, not for food but for work. After 1949, when farming was gradually collectivized, most cattle were held in group ownership by communes. Restrictions existed on the slaughtering of livestock prior to 1980 when only culled draught animals were harvested for beef. For centuries in China it's been either immoral or illegal to kill your "tractor" for food.

Total U.S. cattle inventory beginning year 2009 at 96.7 million head was slightly below the 97.0 million head counted on Jan. 1, 2008. The inventory is contracting after only three years of slight expansion. U.S. beef cow numbers reached a cycle low in 2004 and started to expand in 2005 and 2006. U.S. beef cow numbers on Jan. 1, 2009 dropped to 32.6 million head, the lowest number of cows since 1991. Higher costs of production will hold down cattle inventories but interestingly, heavier carcass weights will keep U.S. beef production steady in 2009-2010.

The European Union (EU-27) cattle population increased slightly in 2009 relative to 2008 (+0.3%). At about 88 million head today, this increase comes after a downward trend recorded since the 1980s. There was also a rise in beef production in 2008 with a rise in average carcass weight. For the EU-27 beef production was expected to fall moderately in through 2009 and into 2010. Producers in France, Germany and the United Kingdom raise 47% of the EU-27 cattle.

Argentina's cattle population was about 52 million head raised on about 190,200 cattle farms in 2007. Nearly 35% of Argentina's cattle are in the province of Buenos Aires. About 10% of cattle in Argentina are dairy cows, primarily Holsteins. About 50% of cattle are Angus, 25-30% Herefords, and the remainder are mostly Brahman or Brahman-crosses with Angus or Hereford.[4]

But, Argentina's lingering economic struggles since the economic collapse of 2005, government export policies (i.e., limits on beef exports to control inflation) and certain commodity price controls combined with intense competition for the higher quality farmland have caused Argentine beef production to drop dramatically since 2005. This analyst predicted in 2007 that Argentina for the first time since the 1500s would become a net beef importer by 2012. That eventuality appears to be on fast track – and came about in 2009.

In a testament to the resilience of Australian cattle producers, that country's cow herd stands at about 28.3 million head – which is above the pre-drought 2002 level. Feedlot capacity is at a

[4] Kenneth H. Mathews, Jr. and Monte Vandeveer, Beef Production in Argentina and Uruguay / LDP-M-159-01, Economic Research Service/USDA, 2007

record 1.15 million head. Meat & Livestock Australia data showed stable of cattle numbers in 2008 before expanding by around 2% in 2008-2009 and again in 2009-2010.

At 26 million head, Mexican cattle inventories declined slightly in calendar year 2007 due in part to increasing exports to the U.S. and feedlot operators reducing inventories due to increasing feed costs. Beef cows make up 11.8 million head of the total cow herd. Cattle inventories are expected to increase very slightly in the northern regions of Mexico, as well as the central and southern areas in the face of rising production costs.

In the Russian Federation beef cows represent only 1% of the nation's 20 million head cow herd. Over the past 10-12 years cattle numbers have been falling. Government leaders are trying to encourage a resurgence of the industry through improved genetics and production practices. Yet, in 2009 the cattle herd is forecast to decrease 3-4% due to low production and reproductive efficiency and beef production is expected to fall 3.5%.

Canada's cattle herd also continued to decline during 2008-2009 as exports to the U.S. accelerated. The year 2009 marked the fourth full year that the U.S. border has been open to Canadian cattle shipments since 2002. As of Jan. 1, 2009, Canadian cattlemen reported 13.9 million head, down by 210,000 head, or 1.5%, from Jan.1, 2008. Despite the decline, the Jan. 1, 2009 inventory was nevertheless 479,000 head above the level as of January 1, 2003, prior to the BSE border closure.

While it's apparent that in most countries that raise cattle for commercial beef production total numbers are flat or decreasing, there's some evidence that with increased production efficiency and productivity, global beef production will slowly increase through the next decade.

U.S. vs. the World

U.S. beef production systems vary a great deal as ranchers and farmers have adapted to varying environmental conditions geographical diversity. Overall though, the U.S. – along with our neighbors in Canada – has a highly differentiated beef production system compared to most other beef producing nations. This difference can be summed up in one word – *corn*. The colossal farming resources granted by the U.S. Corn Belt have shaped domestic beef genetics and production systems for decades. Beef producers put this unique advantage to work in creating "high-quality" grain fed beef products that virtually no one else in the world enjoys.

So, as corn defines the U.S. beef system, for a variety of environmental and socio-economic reasons, other cattle countries, mainly those in South America and Oceania are relegated to growing and finishing beef cattle primarily on grass. They simply don't have the vast climactic resources and production infrastructure to support a massive corn industry. And, they don't have the economic foundations that make raising corn for feed as feasible or practical.

The bottom line is that few countries have the economic luxury of being able to turn corn into beef protein on a scale large enough to define an industry.

A virtual tour of the U.S.'s major global beef players needs to include Australia (Oceania), Brazil, Argentina and Uruguay. Of course these county's beef systems are based mainly on grass finishing.

One can argue that Australia's beef system is a hybrid of grass and grain. The cattle feeding sector grew three-fold from 1996 to 2006, reaching a capacity of 1 million head. The growth in the Australian feedlot sector is tied to increased export demand – particularly the Asian Rim countries of Japan and Korea. Nearly half of all Australian feedlot cattle are finished for export.

In Brazil 180-200 million acres of land could be developed for grazing systems. But, much of this vast land resource lies in remote sub-tropical scrub and brush land in need of clearing, seeding to adapted forages, watering and fencing. It also means a plethora of support infrastructure must follow the cattle.

Of course, the limiting competitive factor throughout South America is the existence of foot-and-mouth disease (FMD). Uruguay (12 million head) is the continent's only major beef

producing nation that enjoys a FMD-free (with vaccination) status. Brazil and Argentina have fallen victim to recurring FMD outbreaks and continue to be shut out of North American and most Asian fresh beef markets. Most observers feel until the disease is controlled continent-wide, Brazil and Argentina will struggle to overcome FMD-related trade sanctions.

As Brazil's comparative advantage globally lays in low-cost grass-fed beef production, expansion into the frontier regions means greater distance from packing/processing facilities and export terminals.

As this shift continues Brazilian ranchers become more reliant on the Nelore breed. The result is diminished prospects for grain finishing and intensive cross-breeding as herds move deeper into remote tropical regions.

Argentina has a small but growing confined feedlot sector where about 100 facilities supply 300,000 of the country's 13 million slaughter cattle annually. Cactus Argentina, a 25,000-head feedlot in Villa Mercedes – a joint venture with Cactus Feeders, Tyson Foods and a local company – is Argentina's largest feedlot. Texas' Cactus Feeders has recently announced a departure from that venture.

In Uruguay, beef exports from its English-based breeds are the name of game. A majority (80%) of Uruguay's beef production is exported – with about 78% of that going to Russia and the Middle East America. Like Brazil and Argentina, anabolics and growth hormones are banned and animal protein is banned in feed.

Uruguay does not have a significant grain-based cattle feeding industry. And, in these countries where cost-of-production is a comparative advantage, added costs associated with concentrated feeding quickly erode this advantage.

But, even with 2.75 times the number of cattle as the U.S., the three South American countries – Argentina, Brazil and Uruguay – together just barely out-produce the U.S. in terms of beef volume (12.5 million metric tones in 2007 versus an estimated 12.0 for the U.S.). And, they don't come close with respect to the value of the beef they produce.

Comparing the U.S. beef system to the South American systems becomes a study in productivity.

When talking beef production efficiencies, it would be a mistake not to mention Brazil's growing environmental movement and its impact.

Today in Brazil, depending on the ecological region, landowners must maintain 20%-80% of their private land in "environmental preserve." This does not include riparian zones where grazing prohibitions exist. In fact, no economic activity can occur within these mandatory preserves – and government and environmental watchdogs are making sure Brazilian landowners abide by the law.

What Is "Quality" Beef?

All too often the term "quality beef" is used within the industry very loosely and rhetorically. It makes us feel good to proclaim that U.S. beef is the highest quality in the world. But, to be fair to everyone we need to ask ourselves what this term really means – and, put the term quality beef" into perspective.

So, what is "quality" beef? I once asked a college class if someone could define "quality beef." A sleepy male voice in the back row answered, "It depends on the cook..." What a great definition!

Quality beef consistently satisfies customer expectations for eating and preparation characteristics. These expectations may include tenderness, flavor, juiciness, color and leanness. The definition also can include type of packaging, ease of preparation and, of course, price. This definition, though, is very subjective and can be fluid. Different consumers have different tastes and preferences.

Domestic consumer expectations also vary as prices vary for cuts, grades and styles of beef. A tour through any supermarket meat case will drive this point home.

Flavor is provided by compounds in intramuscular fat or marbling of beef muscle tissue, and varies with genetics, nutrition, health and several other factors. Juiciness is determined by the amounts of moisture and marbling in the muscle after it has been cooked. Tenderness is determined by the amount of connective tissue, the amount of marbling, and the activity of enzymes that breakdown muscle proteins after slaughter.

Quality beef products are harvested and processed under strict government inspection systems that ensure it is safe, wholesome, and correctly labeled and packaged. The USDA Food Safety and Inspection Service (FSIS) is charged with the ultimate responsibility for protecting the U.S. meat supply. FSIS is also charged with making sure all imported beef is safe and wholesome.

Improving beef quality and consistency begins with understanding the industry targets. These targets include the elimination of injection site blemishes and lesions, bruises, dark cutters, and liver condemnations to name a few.

The 2005 NBQA concluded a 19.2% occurrence of average and high Choice, and only 2.9% Prime beef. The majority of carcasses range between Select (36.7%) and low Choice (35%), with only slight or small amounts of marbling. The true challenge for the U.S. beef industry in producing quality beef lies in eliminating the 6.2% of Standard carcasses that more often lead to an unsatisfactory eating experience.

Addressing the Challenges Faced by Beef Producers

In order to maintain a comparative/competitive advantage and address the challenges ahead, it's suggested that beef producers nationwide consider the following:

1) Become Beef Quality Assurance (BQA) certified. Participation in the BQA is totally voluntary – and it is not a "government" program. BQA links beef producers with livestock production specialists, veterinarians, nutritionists, marketers, animal health companies and food purveyors interested in maintaining and improving the quality of cattle and the beef produced in the U.S.

2) Carefully measure/monitor input and output. This means keeping better records and spending time in developing cost-benefit analysis for every production enterprise. A part of BQA, verification of production practices through auditable records will soon become a necessity.

3) Evaluate your genetic package. Certain supply chains are already mandating adherence to specific genetic systems. Attention to beef cattle genetics selection and management will become even more critical than in the past as "program" beef production increases and replaces commodity beef production.

4) Maintain a sound herd health program. "Management over medicine" will become more critical as our ability to use pharmaceutical products comes under increasing scrutiny. U.S. beef producers must work with their veterinarians to learn more about disease management and reducing treatment for disease. Biosecurity programs, including judicious vaccination for disease, must become a way of life on U.S. cattle operations.

5) Evaluate your pre-weaning/weaning protocol. This is probably the easiest way to manage weather-related variables as well as address marketing opportunities. Traditional weaning programs should be carefully and continually evaluated.

6) Establish source/age verification. This does not have to be high-tech or costly. Work with your local livestock marketing agents, order buyer – or consider joining a marketing/production program or alliance. But, don't expect market "premiums" to last forever – this niche will become the norm.

7) Continually seek better market opportunities. Think "*supply chain*" management. Don't think you're simply a rancher who turns grass into feeder cattle – manage for the end product and continually demand that your efforts be recognized and rewarded.

In the words of Dr. Gary Smith, meats scientist, Colorado State University, "In today's world, if you're producing a commodity product, you'd better expect to receive a commodity price."