

THE DYNAMIC WORLD OF HAY EXPORTS: HOW INCREASING POPULATIONS AND SCARCE RESOURCES WILL SHAPE THE INDUSTRY

Nicholas J. Gombos¹

ABSTRACT

The U.S. hay export industry is a unique blend of agriculture and international business, while also influenced by changes in world population and diminishing resources. Nations and civilizations have traded commodities for millennia, but the export of U.S. forage and roughage is relatively new and is still being shaped and transformed. This writing will analyze the effects of population growth and resource scarcity and how they have shaped and will continue to influence the future of this industry.

Key Words: hay exports, resource scarcity, population growth, alfalfa hay

INTRODUCTION

Exports of U.S. Alfalfa Hay began in the 1970's with alfalfa hay cube shipments to Japan to meet growing milk consumption and a rapidly advancing society. As the Japanese dairy industry developed, so did the demand for higher quality forage products to increase health and production of Japanese dairy herds. In the middle to late 1980's, there was a large increase in forage imports into Japan as well as developing markets in South Korea and Taiwan.

Over the past decade, new emerging markets have formed as a result of limited resources, rapid population growth and increased demand for higher quality human and animal feed. The U.S. hay export industry, with access to large amounts of agricultural land, access to irrigation water, in particular the Western U.S., will continue to be affected and shaped as a result.

HAY EXPORT MARKETS

Mature Markets. Over the past several decades, the U.S. forage export industry has grown and witnessed the development of several mature markets such as; Japan, South Korea, and Taiwan. Japan is the largest importing nation of forage products, with significant U.S. export volumes as noted by Figure 1. These markets have developed, due in part to limited resources including arable land, irrigation water, and labor. Japan, being an island nation, with a relatively large population, has managed their resources carefully. Most farms in Japan, are small scale, family based farms that produce limited quantities. As a result of purchasing high quality forage from the U.S., these farms have been able to increase output, and minimize domestic usage of resources. The value added supply chain of the U.S. export forage industry has been a successful

¹ N. Gombos (nickgombos@acxpacific.com), ACX Pacific Northwest, Inc., 920 E. Pacific Coast Hwy, Wilmington, CA 90744; **In:** Proceedings, 2011 Western Alfalfa & Forage Conference, Las Vegas, NV, 11-13 December, 2011. UC Cooperative Extension, Plant Sciences Department, University of California, Davis, CA 95616. (See <http://alfalfa.ucdavis.edu> for this and other alfalfa symposium Proceedings.)

replacement for Japan. This example can also be mirrored in the cases of South Korea and Taiwan.

Country	Product	UOM	2005	2006	2007	2008	2009	2010
Japan	OTHER HAY	MT	1,218,019	1,036,789	999,128	1,107,683	996,085	972,988
Japan	ALFALFA HAY	MT	614,367	559,523	490,106	558,538	686,148	540,444
Grand Total		MT	1,832,386	1,596,312	1,489,234	1,666,221	1,682,233	1,513,432
				-15%	-7%	11%	1%	-11%

Figure 1 Exports of alfalfa and other forage to Japan. Source: Department of Commerce, U.S. Census Bureau, Foreign Trade Statistics

Developing Markets. The Middle East is a region long plagued by scarce resources, especially water. Many nations in this region rely on huge rivers or ancient aquifers for their drinking water and agricultural irrigation needs. As demand for fresh, clean water increases, these resources are further strained. Some authorities believe that the consumption is much higher than the replacement rate of water and without a change there will be a critical problem and point of no reversal. (Berman, Ilan) Some governments, specifically that of the United Arab Emirates, have initiated food security strategies as a result of this water crisis and limited ability to produce forage enough to meet their own domestic demand. They are outsourcing their resources to nations such as the U.S., thus driving a significant increase in forage exports over the past 5 years, as indicated in Figure 3. In combination with outsourcing their forage supply chains, many nations in the Middle East are looking toward enhanced irrigation technology to reduce consumption and increase output.

Huge water projects in China, India and other countries in the Far East and Asia are a remedy and result of inefficient irrigation techniques, pollution and diminishing resources. China has been known for its aggressive agricultural projects, particularly in the northern region. (Hong, Yang) However, these projects may have come too late, or may not be capable of keeping pace with the massive demand from China. It is estimated that China's population has grown from approximately half of a billion people to over 1.4 billion. (Rosenberg, Matt) As indicated in Figure 2, the imports of Alfalfa Hay from the U.S. to China have nearly doubled each year since 2005. It may be possible for China to become a net producer of forage someday, if the challenge of water and technology is overcome. However, for the time being, China is a rapidly growing and developing nation with an appetite for higher quality consumer goods, in particular milk and dairy products, which were once unreachable to most of its citizens. For the immediate future, it is clear that China will continue to demand U.S. forage products as an integral part of their supply chain.

Country	Product	UOM	2005	2006	2007	2008	2009	2010
China	ALFALFA HAY	MT	251	420	2,321	19,348	74,985	140,363
China	OTHER HAY	MT	0	0	79	0	12,482	81,227
Grand Total		MT	251	420	2,400	19,348	87,467	221,590
				40%	83%	88%	78%	61%

Figure 2 Exports of alfalfa and other forage to China. Source: Department of Commerce, U.S. Census Bureau, Foreign Trade Statistics

Country	Product	UOM	2005	2006	2007	2008	2009	2010
Bahrain	ALFALFA HAY	MT	0	0	0	0	0	272
Bahrain	OTHER HAY	MT	1,786	903	585	1,786	2,197	1,319
Israel	OTHER HAY	MT	0	0	0	0	813	278
Jordan	ALFALFA HAY	MT	0	0	0	0	1,227	5,685
Jordan	OTHER HAY	MT	0	0	0	23	1,027	2,740
Kuwait	ALFALFA HAY	MT	0	0	0	181	1,908	4,152
Kuwait	OTHER HAY	MT	0	0	0	0	1,273	432
Oman	ALFALFA HAY	MT	0	0	1,028	0	0	220
Oman	OTHER HAY	MT	44	33	0	0	0	0
Qatar	ALFALFA HAY	MT	0	310	27	14	1,071	2,040
Qatar	OTHER HAY	MT	25	98	73	689	956	1,872
Saudi Arabia	ALFALFA HAY	MT	0	0	0	130	1,329	3,324
Saudi Arabia	OTHER HAY	MT	0	0	0	470	345	4,601
United Arab Emirates	ALFALFA HAY	MT	9,299	18,621	27,946	103,419	495,432	414,179
United Arab Emirates	OTHER HAY	MT	25,366	20,988	12,977	26,121	179,519	231,578
Yemen	ALFALFA HAY	MT	0	13	0	0	0	0
Yemen	OTHER HAY	MT	0	9	0	0	0	0
Grand Total		MT	36,520	40,975	42,636	132,833	687,097	672,692
				11%	4%	68%	81%	-2%

Figure 3 Exports of alfalfa and other forage to Middle East. Source: Department of Commerce, U.S. Census Bureau, Foreign Trade Statistics

CORRELATION OF ALFALFA AND COMMODITIES PRICES

Price trends and volatility. Alfalfa hay, the most commonly fed and exported forage from the U.S. can be directly correlated in price to competing crops, most often grains along with the highest indirect cost of forage production, crude oil. Increasing demand for all commodities, growing populations and diminishing resources has contributed to dramatic price volatility since 2007. With the recent developments of drought, biofuel technology, and population spikes most developing nations are struggling to keep up with demand on basic food stocks and commodities. This demand has driven many commodities prices such as corn and wheat to all-time highs. Some would argue that these price swings are driven by speculation, while others attribute to an imbalance of supply and demand. In Figure 4, the prices of corn, wheat, crude oil and alfalfa are analyzed over the past decade. It is evident that these commodities drive the price of alfalfa, and

one could argue are directly correlated. Therefore, as world demand impacts the prices of these commodities, so will the demand for U.S. exported forage.

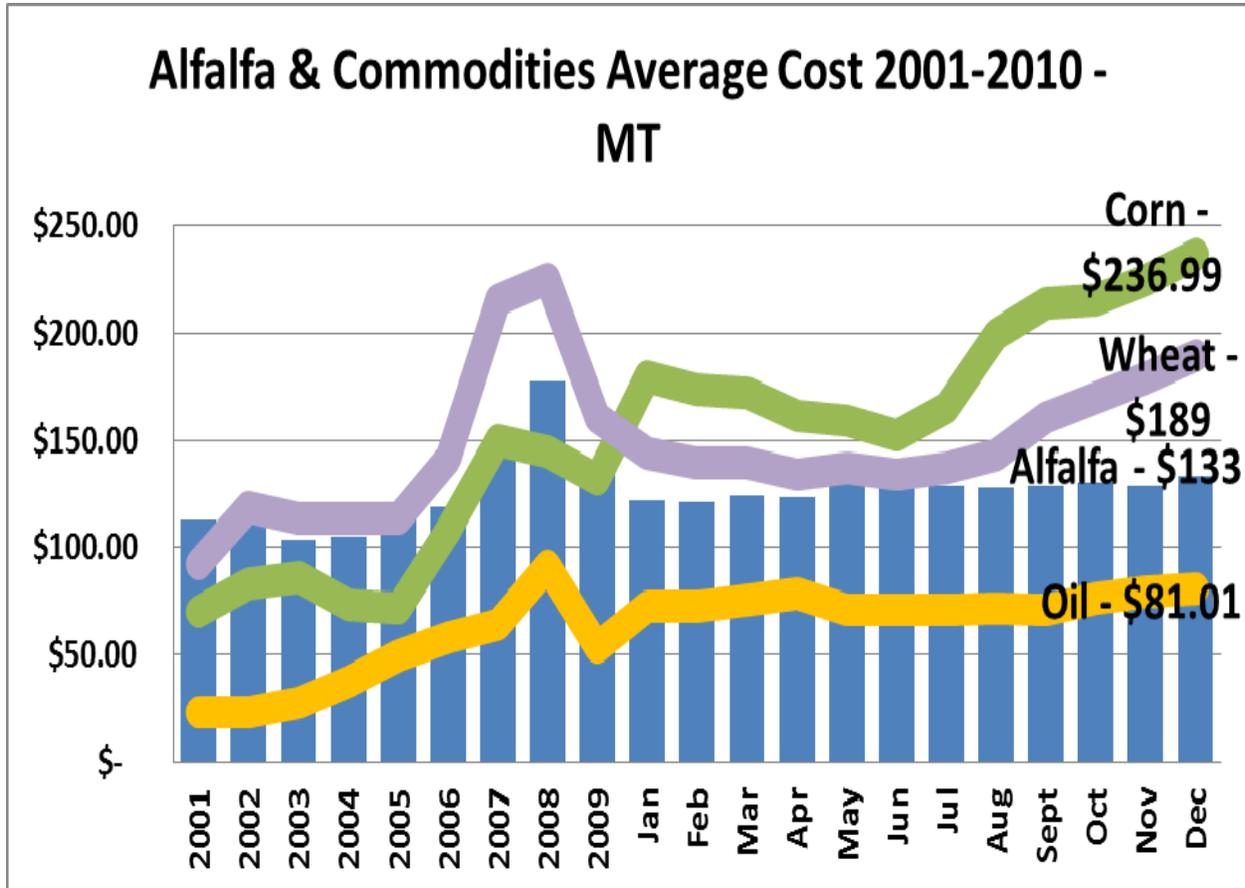


Figure 4, examination of commodity prices compared to Alfalfa Hay price trends in the Western U.S.

FUTURE TRENDS AND POSSIBLE SCENARIOS

Continued growth and emerging markets. It is evident that the U.S. domestic forage and forage export industries will have an incredible opportunity in the future as the world changes. Nations are struggling to keep up with demand, and dealing with serious issues of land and water availability. This alone could drive demand for U.S. hay exports even further in the coming years. With this increase in demand, U.S. exporters and farmers would need to work together and continue to add value to the supply chain by reducing costs and increasing production. Unfortunately, with abundant resources in recent history, some of the farming practices in the U.S. are not the most efficient, particularly in regard to irrigation and soil management. To curb

supply and price issues, the U.S. must improve and maximize the efficiency and output of forage crops to maintain the viability of the U.S. as a major forage exporting industry, while also supplying the needs of domestic users.

Continued volatility and new supply. With the recent and historic highs, lows and volatility in world commodities prices, including hay, there are several new supply sources of forage developing around the world. Countries such as Spain, Egypt, Pakistan, Australia, Brazil and Argentina all remain viable sources of forage supply. With spikes in prices, particularly in the U.S. this may lead to other markets and new forage producing nations, ultimately in competition with the hay export industry in the U.S. Many public and private funds are investing in new and undeveloped nations for sources of competitive animal feed that are more reliable and less volatile than the U.S. hay export industry.

CONCLUSION

Although not entirely without issues, the U.S. with relatively low cost, and readily available resources, maintains its position as a viable outsource for forage. Whether or not the hay export market will continue to be dominated by the Western U.S. is left to be realized. The world will continue to need and demand resources with the growth of population and modernization of societies. In addition, new competition for forage export may be facilitated by price volatility and more competitive cost structures. One thing remains certain; that the export hay industry remains a dynamic and critical part of the world's food supply chain.

REFERENCES

- 1) Berman, Ilan, and Michael Wihbey. "The New Water Politics of the Middle East." *Strategic Review*. Summer 1999: n. page. Web. 18 Nov. 2011. <<http://www.iasps.org/strategic/water.htm>>.
- 2) Hong, Yang., Xiaohe Zhang, Alexander J.B. Zehnder, Water scarcity, pricing mechanism and institutional reform in northern China irrigated agriculture, *Agricultural Water Management*, Volume 61, Issue 2, 30 June 2003, Pages 143-161, ISSN 0378-3774, 10.1016/S0378-3774(02)00164-6.
- 3) Rosegrant, Mark W., Ximing Cai, Sarah A. Cline, *World water and food to 2025: dealing with scarcity*, International Food Policy Research Institute, 2002.
- 4) Rosenberg, Matt. "China Population: The Population Growth of the World's Largest Country." *About.com*. 17 11 2010: n. page. Web. 18 Nov. 2011. <<http://geography.about.com/od/populationgeography/a/chinapopulation.htm>>.