ADSA Multidisciplinary and International Leadership Keynote (MILK) Symposium: Global dairy perspective—Production, processing, people, politics, and priorities

210 Role of milk and milk production in reducing poverty and malnutrition in emerging market countries. Jim Yazman*, *US Agency for International Agriculture, Washington, DC.*

Milk is the food that unites humans with the more than 5,000 other members of the Mammalia class. Milk supplies critical nutrients for newborns and is valued as a dietary component for all age groups. Expanding global trade in milk and milk components reflects an important role as a traditional foodstuff and in food product innovation. The rapidly expanding and urbanized middle class in emerging market countries is driving increased demand for milk and dairy products. The international development community and government partners are working to improve food security for vulnerable populations, including reducing high rates of malnutrition in adolescent, pregnant and nursing women and infants through diversification of diets. Milk and milk products are recognized by nutritionists as key components of diversified diets. Families grazing livestock across semi-arid lands often manage milking animals to supply milk for women and young children. In higher-potential areas, conversion of forage and crop by-products to milk and dairy products is a key income generation strategy for the poor, with women often controlling milk income. The US Agency for International Development (USAID) and other development partners recognize the potential of milk production and marketing to transform the lives of the rural poor. The Feed the Future initiative (www.feedthefuture.gov) is the US Government's contribution to the global effort to improve income, food security and nutrition in poor households. Implemented in in Africa, Asia and Latin America and the Caribbean, Feed the Future strategies enhance household income by linking families to dairy value chains while increasing the availability, access and utilization of milk as a nutrient-rich animal-source food. Pastoralists as well as sedentary smallholder producers are assisted to increase milk-derived income as well as produce milk for home consumption. Dairy producers in emerging market countries face several challenges in an increasingly globalized dairy market: accessing technology and services; meeting raw milk quality standards; and control of production diseases, especially mastitis.

Key Words: food security, malnutrition

211 Meeting 2050 global milk demand while freezing the environmental footprint of dairy production. Roger A. Cady and Howard B. Green*, *Elanco, Greenfield, IN.*

The Food and Agriculture Organization (FAO) of the United Nations projects that the global milk demand in 2050 will exceed 1 billion metric tonnes (MT), an increase of nearly 60% compared with 2010 production levels. The increase in milk solids demand will be 50 million MT, more than any other animal-sourced food except poultry products. The primary sources of human consumed dairy products are cattle and water buffalo (96%). Combined global milk production from these 2 species more than doubled from 1961 to 2010 (331.5 million MT to 692.0). However, milk production has not kept pace with human population growth, resulting in 6% less bovine milk produced per capita than in 1961. Milk production must grow more in the next 35 years than it has in the past 50. Furthermore, growth must occur without increasing the environmental footprint of milk production. Between 1961 and 2010, milk supply from dairy cattle increased primarily due to increased cows (54%). Since 2007, 82% of supply increase is due to a larger cattle population. That contrasts to an average annual yield increase of only 9.7 kg/cow/yr of cattle milk since 1961. Every additional cow to the population adds between 9 and 13 MT of CO_2e (accounts for additional replacement heifers and bulls) to the atmosphere annually. To meet 2050 demand and freeze the environmental impact of milk production requires increasing yield by at least 45 kg/cow/yr annually between now and 2050. This compares to sustained annual increases in developed countries of 130 kg/cow/yr and over 200 kg/cow/yr in some countries with developing dairy industries. In regions where milk production increases are limited, increased trade will be required to source milk from more resilient production regions.

Key Words: dairy, environment, sustainability

212 Global dairy: African perspective. Pieter H. Henning*[1] and Lourens J. Erasmus[2], *[1]Meadow Feeds, Johannesburg, South Africa, [2]University of Pretoria, Pretoria, South Africa.*

Africa is often seen as a "dark continent" yet it has the potential to be a continent of "milk and honey." The objectives of this presentation are to describe the dairy industry in Africa, highlight the challenges faced, and propose how they may be met. The human population of Africa is just over 1 billion. The 8 leading "dairy" countries in Africa together have approximately 37 million dairy cows. Average milk production varies from 0.12 to 6.45 tons/cow/year, and annual per capita consumption ranges from 8 to 241 kg milk equivalent (ME). Comparative figures for the United States are 9.2 million dairy cows, 9.44 tons/cow/year and 259 kg ME/capita. Growing urbanization and westernization are increasing the demand for milk and dairy products in Africa. This is further supported by a rapidly expanding supermarket industry. There is good potential for even more growth in demand. Africa is currently a net-importer (ca 6 million tonnes/year) of dairy products. Cows, though, are abundant in Africa and there is great scope to increase milk production from the continent's cow population. Growth in dairy farming will also contribute to improved livelihood for many African people. However, serious challenges in respect of infrastructure, animal husbandry practices, genetic material, animal nutrition and cow health have to be met if Africa's dairy potential is to be realized. Africa has the intellectual potential but needs to learn and apply suitable technical knowledge and skills. The internet, cell phone, and tablet have revolutionized communication and can play a significant role in the transfer of this knowledge and skills to the emerging African dairy farmer. Politics still remain a stumbling block in some African countries. Two priorities for the dairy industry in Africa are infrastructure creation (from milk collection to final products) and the transfer of appropriate technical knowledge and skills to create successful dairy farmers, whether small or big. The latter priority, especially, poses a challenging opportunity for first-world dairy organizations, such as ADSA, and its members.

Key Words: Africa, dairy industry, technical challenge

213 Dairy in China: Present status and future prospects. Jiaqu Wang*, *Chinese Academy of Agricultural Sciences, Beijing, China.*

China's dairy industry has made tremendous progress in the past 20 years, with cows and milk production growing >10% /yr. In 2000,

total number of dairy cattle was <5 million producing 8.27 million tons of milk. In 2014 there were 14.98 million producing 37.25 million tons of milk. Dairy was the most rapid growing section among all livestock production. Herd size shifted from 5 cows in 1995 to a larger present size, with 40% of dairy cows in herds >50 cows. Over 70% of milk is produced and processed in northern China. Dairy industry international trade has shown strong activities since China became a WTO member. Animal importation increased from 37453 cows in 2009 to 99348 cows (2011) and 195000 cows (2014). Importation of dairy products grew more significantly. In 2009, China imported 596999 tons of dairy products, but increased to 1,880,000 tons in 2014. 88% was dry products, mainly milk powder and whey. Seventy percent of the imported milk powder was from New Zealand with Australia, EU and USA also important dairy trade sectors. China exported 20000 to 25000 tons of dairy products annually in the past 5 years. Annual urban dairy product consumption increased from 15 kg/ person (2000) to 23 kg/person (2012), while consumption in rural areas remains relatively low and stagnant (<10 kg/person). Dairy processing plants are becoming larger with Yili and Mengniu processing 10,000 tons of raw milk daily. Currently, raw milk production is from 3 models: Cropping area model (70% of milk; small family farms, local feeds, local raw milk stations), suburban area model (20%; near stable consumer markets) and pasture model (10%). Average annual productivity is 5500 kg /cow. Low productivity means low efficiency and high cost. It is reflected in high raw milk prices ($0.8/L in 2013). China will be the world market center of dairy products in the future due to the rapid growing demand of the huge population. More international trade of dairy products will encourage information and technology exchanges, which will help improve quality and efficiency of domestic production. China's dairy industry must be ready for international competition and cooperation. Standards, policies and legislations will be critical for such prospects.

Key Words: China, dairy production, dairy product

214 Brazil: Recent growth, importance and future of dairy markets. Marcelo Pereira de Carvalho*, *AgriPoint Consultoria, Piracicaba, SP, Brazil.*

This presentation will offer an overview of recent and expected future developments of milk and dairy markets in Brazil, which have expanded significantly in the last 15 years. Since 2000, per capita consumption moved from 122 to 176 kg/year in 2014 (in milk-equivalent terms). As population grew from 173 million to 203 million in the same period, total market increase almost 70% or 14,6 billion kg in volume. This growth was accomplished mainly by domestic production, which expanded from 19,7 billion kg (2000) to 34,3 billion (2013). From 2001 to 2013, the amount of milk delivered to dairy companies for processing increase 6,5x more than the amount unprocessed, a rate of growth of 5,4% per year. Cheese production increased from 440.000 metric tons in 2000 to nearly 1 million tons in 2013, a growth of 6,6% per year, reaching 5 kg/person/year. In the last 10 years, fresh dairy products doubled its market size, from 780.000 tons in 2003 to 1.450.000 tons in 2013, reaching 7,5 kg/person/year. Fluid milk market grew 2,3% per year, with a gradual replacement of raw and pasteurized milk by UHT milk. Income growth and better income distribution were the most important drivers for this growth. Since 1994, minimum wage grew 2x more than milk prices. From 2004 to 2013, salaries grew 72% over inflation, with 17 million new jobs created. Middle class expanded from 33% to 42% of total population. What are the challenges? Economic performance is lagging behind what Brazil experienced during the last decade and past income gains are being challenged. Also, more strict regulation regarding labeling and claims may negatively affect innovation. There have been milk quality problems, suggesting weak supply chain coordination. Productivity, production per farm, cost of production and overall farm efficiency also factors that need to be greatly improved. Anti-dairy groups are not an important factor yet, but there is a growing number of health professionals not recommending dairy products. Brazil is a large and still growing dairy market, but a more challenging environment demands a more active approach to ensure market expansion.

Key Words: consumption, markets, trend