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'Unlocking the Export Potential of Armenia's Landlocked Dairy Sector'

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Abstract

Forty-two percent (42%) of the Armenian population lives below the poverty line ($1.00/day). Thirty percent (30%) live below the food line (ROA National Census, 2005). Before WWI, goat breeding in Armenia comprised 7-8% of all animal breeding. From an estimated population high of 273,000 head, the population decreased from 222,000 head in 1941 to 14,000 by 1992 (Scarfe, 1999). Despite previously high populations, native breeds in Armenia, well adapted to harsh mountainous environments, produce low volumes of milk and low quality fleece. Utilizing archival research and participant observation this study analyzes the establishment of the Armenian dairy goat industry as part of a comprehensive rural development/poverty reduction strategy by the United States Department of Agriculture (USDA). As a case study with ramifications for international agricultural development in other developing countries, this study illustrates three central and dynamic lessons learned from the USDA's Marketing Assistance Project (1995-2005) in Armenia: (1) With comprehensive market research, an entire industry can be established by rebuilding once existing livestock populations; (2) Every link in the marketing chain—from farm gate to fork—must develop to shift from domestic to international marketing; and (3) The ability to provide field-requested technical expertise is essential to meeting the specific needs of committed local partners.

Introduction

Forty-two percent (42%) of the Armenian population lives below the poverty line ($1.00/day). Thirty percent (30%) live below the food line (ROA National Census, 2005). Before World War I, goat breeding in Armenia comprised 7-8% of all animal breeding. From an estimated population high of 273,000 head, the population decreased from 222,000 head in 1941 to 14,000 by 1992 (Scarfe, 1999). Despite previously high populations, native breeds in Armenia produce low milk volume and low quality fleece. Between 2001 and 2005 the United States Department of Agriculture's Marketing Assistance Project (USDA-MAP) developed an entire industry by re-establishing the goat population and assisting dairy processing agribusinesses. This study analyzes the evolution of the Armenian goat cheese industry and discusses problems posed at every level of the supply chain. Utilizing archival research and participant observation, this study explores the four-year development of the Armenian goat industry and illustrates central and dynamic lessons learned from the USDA-MAP experience (1996-2005). It is hoped this study will be useful to rural development practitioners and researchers.

Significance

Armenia is a small, mountainous, landlocked country with few natural resources and less than 40% arable land. With an area of 29,800 kilometers, it borders Georgia, Azerbaijan, Iran, and Turkey (see Figure 1). An official census in 2001 listed the permanent population in Armenia at 3.2 million, but it is suspected to be far less. An estimated sixty-four percent (64%) of the population lives in urban areas with fifty-four percent (54%) in the capital city of Yerevan (Republic of Armenia, 2005). Forty-two percent (42%) of the population live below the poverty line ($1.00/day) and thirty percent (30%) live below the food line (Minasyan & Mkrchyan, 2005; CIA Factbook, 2006).

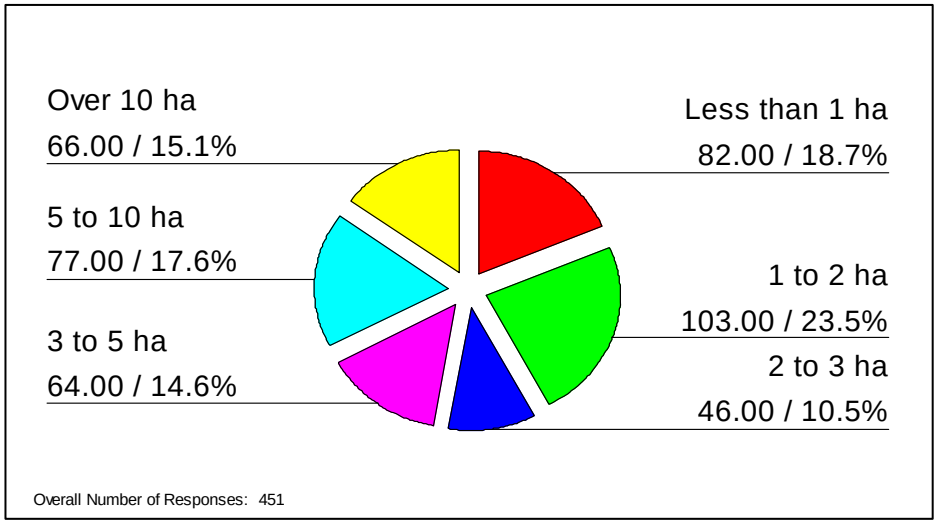
Figure 1 The Republic of Armenia

Source: CIA Factbook, 2006

Between 1920 and 1991, Armenia was one of fifteen Republics which comprised the Soviet Union. By 1992, with the collapse of the Soviet Union, Armenia suffered a sharp economic decline as the result of three events—a devastating earthquake in the north that occurred a few years earlier, a full-scale war with its neighbor Azerbaijan over a disputed region called Karabakh, and the immediate succession of economic support from Russia. These events left Armenia with a trade and transit embargo around most of it, an energy shortage, 230,000 Armenian refugees from Azerbajan, and two thirds of the population surviving on humanitarian assistance (CIA Factbook, 2006).

In five years agricultural output dropped seventeen percent (17%) and livestock numbers halved. Land privatization led to fragmented small plots, and credit became unavailable as crop production shifted from commercial to subsistence farming. Inflation set in. Privatization alone left approximately 320,000 farmers with scattered parcels of arable land—averaging 1.4-1.7 hectares. Of 451 farmers who participated in a survey on land parcels, 23.5% owned 1-2 ha, 18.7% owned less than 1 ha, 14.6% owned 3-5 ha, 17.6% owned 5-10 ha, and 15.1% owned over 10 ha. From this population, 42.2% had 2 ha or less. See Table 1.

Table 1 Survey of Small Landholders Following Privatization



Source: World Bank, 1995

Livestock was privatized at the same time as land allocating five cattle and twenty sheep per household, but the major constraints with raising livestock were genetic materials with low performance characteristics, the absence of an Extension service and research support activities, and viable markets (Sardaryan, 2001).

In 1992 Armenian officials asked the United States government for humanitarian assistance. The United States Congress passed the Freedom Support Act (Public Law 102-511) in 1992, the primary mechanism for foreign aid to the former Soviet Union. [1] By passing along

[1] (http://www.fas.gov/nuke/control/ctr/docs/s2532.html, viewed 9 January 2006)

the ‘peace dividend’, the military savings brought on by the end of the Cold War, the Freedom Support Act (FSA) was used as a tool to help new countries with emerging economies, like Armenia, reduce poverty and become more democratic during their transitions from communism to capitalism. With FSA funds, the U.S. Department of Agriculture responded to Armenia’s request for economic assistance with an agricultural extension program focusing on Armenian farm level production.

By 1996 USDA’s assistance evolved into market-driven agribusiness level assistance (Erysian, 2005). The aid project created to provide this assistance was called the Marketing Assistance Project or MAP. With an annual operating budget of approximately USD$7.5 million and 100 employees, USDA-MAP influenced the development of Armenian agribusinesses and rural poverty reduction over a nine year period, investing over USD$65 million (Erysian, 2005). The USDA-MAP portfolio included financial assistance in the form of loans, grants, and credit clubs, and expertise and capacity building among Armenian counterparts in agricultural extension, animal health and production, food safety, and in developing local and international markets. Between 1996 and 2005 USDA-MAP assisted farmers and agribusinesses in producing, marketing, and exporting food and beverage products to increase incomes, create jobs, and raise the standard of living for rural Armenians. A rural marketing assessment in 1993-1994 identified that the agricultural sector suffered from a lack of market information, farmer associations and cooperatives, support services, progressive public policies, and long distances between producers and consumers. One of the tools MAP used to combat these technical and marketing problems was to supply Land-grant university consultants on short- and medium-term assignments.

Research Methods

The research methods used for this study of the Armenian goat industry were archival document review and participant observation. Archival research consisted of analyzing primary and secondary documents from the United States Marketing Assistance Project. As the Marketing Manager and then Director of MAP, I was both a participating actor and participant observer in the project’s activities. To improve the internal validity of this research and prevent subjective bias, triangulation was used to cross check the findings from my participant observation against archival records (Bernard, 1994).

Analysis of the Development of the Armenian Goat Industry Sector

The MAP approach to market development began with identifying a profitable market for a product. Examining the dairy sector, it was clear farmers produced small volumes of poor quality milk without regard to sanitation at the farm level or refrigeration thereafter. Farmers possessed almost no knowledge of demand and pricing strategies. If animals or milk products—such as cheese—were marketed (as opposed to barter) it was at a low price offered to middlemen.

Beginning in 2002 the Marketing Assistance Project established milk collection and cooling centers and farmers’ cooperatives for cow and goat milk. More than twenty-two milk collection and cooling centers were created, which include over 2400 farmers selling quality

milk to processors. Today ninety-five percent (95%) of the cheese varieties in the Armenian domestic market have been developed with USDA expertise: more than twenty-two different varieties such as Emmental, Blue, Smoked, String, Holland, Edem, Tom, and others have been developed and exported (USDA-MAP, 2004). Also in 2002, in cooperation with Oklahoma's Langston University, a large potential market for Armenian goat cheese was identified in Glendale, California—considered one of three Armenian epicenters in the United States with an estimated Armenian population of 78,000 (U.S. Census, 2000). A smaller market was also identified in the neighboring Republic of Georgia. The demand was upwards of 200 tons. MAP set about working with every link in the marketing chain to fill this demand. This meant establishing an entire goat cheese industry.

Goat Industry Characteristics

More people consume dairy products from goats than from any other animal in the world. Goats are among the smallest domesticated ruminants and they thrive in arid, semitropical, or mountainous countries, like Armenia. More than 460 million goats in the world produce over 4.5 million tons of milk and 1.2 million tons of meat annually. Goats are friendly animals. With proper attention goats maintain good health and can be managed easily by children. Goat's milk greatly improves the diet of many rural families by exceeding cow milk in terms of protein content and it can be used for high quality cheese—Feta, Brinza, Souligouni, *etc*. A goat eats little, occupies a small area, and produces enough milk for the average unitary family. An average doe yields 2 liters per day (Attfield, 1990). Goats are browsers, preferring new growth of shrubs and the seed heads of grasses to lower quality older growth in a pasture. They select the most nutritious parts of plants, can use a wide range of forage, and hence are able to survive in areas where other livestock do not (Child, 1984).

Saanen, Toggenburg, Alpine, and Nubian breeds, the world's leaders in milk production, were chosen to genetically improve breeding goat production. Originally from Switzerland, Saanens have been bred for odor-free, totally white milk. This breed is light cream in color. They may or may not have horns, are usually short-haired, and are known around the world as leading milk producers. Toggenburgs are brown with white strips on the face, ears, and legs, are mostly short-haired, and have erect ears. They, too, are of Swiss origin but are shorter and lighter than Saanens. They are reliable milk producers summer and winter, in temperate and tropical zones. Alpines, another Swiss breed, are short-haired and as tall and strong as Saanens. They are colored white on black and produce less milk, usually, than Saanens or Toggenburgs. Nubians originated in Africa. The breed—as it exists today—was developed in England by crossing Nubian bucks with British dairy breeds. Nubians have a heavy arched nose and long ears, spiral horns, and short hair. They are as tall as Saanens but give milk higher in fat content. They are less tolerant of cold but they do well in hot climates (Attfield, 1990).

Goat Breeding In Armenia

Before World War I goat breeding in Armenia comprised 7-8% of all animal breeding. Almost all regions in Armenia were involved and there were approximately 273,000 head. From 1941 to 1992 goats decreased from 222,000 head to 14,000 head. Today there are

approximately 48,000 head. For fifty years Armenian goat breeding gave minimal consideration to genetic improvement or the problems of herd inbreeding (Hutchens, 2001). Local breeds express phenotypic characteristics as a genetic mix of European type breeds (erect ears), some Nubian type (pendulous ears), and the heavy influence of mohair producing Turkish Angora. Local breeds produce low quality fleece and a low volume of milk. The average milk yield for indigenous varieties is 0.7 liters/day. They are, however, characterized by a strong constitution and hard bone system (Scarfe, 1999).

Industry Development

The Marketing Assistance Project's general goals for establishing a goat industry development project in Armenia were poverty alleviation, the improvement of small farmers' operational environment, the introduction of new technology to increase productivity, and the increase in farmers' livelihoods by creating opportunities and conditions for market access. To achieve these goals, MAP began with the development, testing, and provision of proven genetics and the development and promotion of economical feeding systems and disease control interventions that helped increase animal productivity. Government and private sector involvement in on-farm development and Extension opportunities emphasized capacity building and applied research. USDA-MAP strategically created opportunities for small farmers to observe and be involved in the development process. The tactics employed to achieve these general and specific objectives included the establishment of small dairies in villages for processing goat milk, supporting and improving traditional Armenian cheese production and developing new types of goat cheeses, examining the possibilities for direct marketing and transportation, establishing a domestic niche market for goat milk products, and developing an export market.

Within the framework of the USDA's Goat Industry Development Program (GIDP), MAP worked with the only goat research institute in the United States—the E. Kirka de la Garza Institute for Goat Research at Langston University—to develop a breeding program for the recording, selection, and multiplication of improved goat genetics. Local villagers were eager to receive hybrid goats from Western and local Armenian varieties, and MAP's Armenian Improved Dairy Center became an official breeding center in September, 2000 (Gipson, 2002).

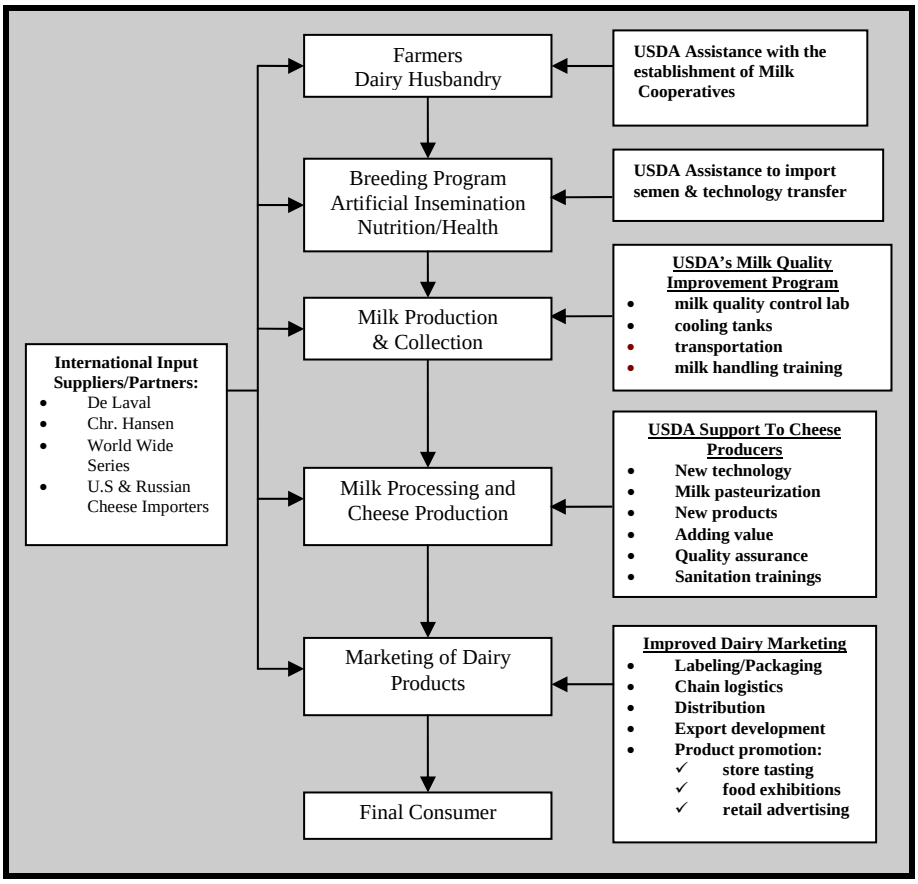
Goats can breed at any month of the year, but in temperate climates they breed seasonally, generally in the autumn (September and October) as the days become shorter, and they produce young about five months later. Most breeds reach sexual maturity in five months. MAP began a breeding program in 1999 whereby via natural breeding and artificial insemination first generation crossbreds between Western purebreds and local breeds produced the Yeghegnadzor breed. This hybrid doubled milk volume from an average of 0.7 liters/day to 1.5 liters/day (Babyan, 2005).

Market Chain Development Approach

To develop a commercial goat cheese industry, MAP identified all the links in the marketing chain necessary to provide the consumer with high quality products. MAP worked with farmers

on breeding issues, housing, feeding, and herd health concerns. Armenian Agricultural Academy professors, local Extension agents, and international consultants all contributed at this level. Assistance was provided to farmer groups to organize and raise credit and meet standards set by a milk quality program. Once milk was collected, additional interventions allowed for cheese maketing, sanitation, and quality improvement. Finally, MAP completed the chain with a cheese marketing program that delivered premium goat cheese to a demanding consumer. See Figure 2.

Figure 2 USDA-MAP Diary Supply Chain Development



Source: Adapted from Engels & Sardaryan, 2006

Farmer Cooperatives

At the same time as the breeding program, MAP worked with farmers to create milk marketing cooperatives that collected and transported milke to a central cooling and collection station. MAP helped cooperatives source, import, and lease economical milk cooling tanks from Italy and trained co-op members in record-keeping to document how much milk was collected from what farmer to assure proper payments were made for milk. Quality testing was also undertaken before milk was accepted, rewarding small producers who offered clean, wholesome milk and rejecting those with tainted product. In addition, to be sustainable, training was provided to milk cooperatives in leadership, governance, democracy, transparency, and the development of trust between the association and its members.

Goat Cheese Plants

Concurrent to this, work began with several villages to build goat cheese plants. The processing facilities were based in those villages that had the greatest number of goats and a growing milk cooperative. Small grants were provided to remodel facilities and provide a refrigeration room, procure lab equipment for food safety, and eventually leases were offered for pasteurizing equipment. In addition, a series of American and European cheese-making specialists worked side-by-side to provide training to improve standard goat cheese products and introduce new ones.

Cheese marketing

A cheese marketing program completed all the links in the marketing chain as the Marketing Assistance Project helped clients with packaging, labeling, product promotion, and shipping. Support for design and procurement of packaging included clay pots, glass jars, and plastic 1 and 7 liter buckets. Labeling design and printing included multiple languages, net weight, ingredients, *etc*. Product promotion ranged from market samples, and domestic trade exhibitions to retailing and international trade shows. Shipping was made possible by procuring enough volume from numerous producers to meet market demands, creating uniform packaging, negotiating contracts, and export management services. The initial market potential was low, but soon increased by 50% and then 100%. International markets were also identified in Russia (2002) and California (2003). In 2000 there was no production of commercial goat cheese in Armenia and in 2005 the demand outstripped the supply when a 40 ton order for goat cheese was received from a U.S. West Coast distributor.

Problems in the Goat Cheese Industry Supply Chain

The initial 1993-1994 USDA rural marketing assessment identified that the agricultural sector suffered from a lack of market information, farmer associations and cooperatives, industry support services, progressive public policies, and long distances between producers and consumers. As USDA-MAP worked on each of these problems, other critical issues were also identified:

- At the farm gate:
    - poor pasture land management perpetuated poorly fed, unhealthy animals, and unsanitary milking procedures often contaminated the milk supply before it reached cooperative cooling tanks.
    - initial expenditures in genetics were not found to be cost effective as it was less expensive and more efficient for hybrid goats to reproduce naturally with local varieties.
    - supplying studs to local farmers proved difficult as valuable hybrids were often underfed and malnourished as farmers treated them in the same manner as their more rugged indigenous Armenian counterparts.

- At the dairy processing level:
    - without USDA assistance, pasteurization was non-existent. Processors saw little value in the costly process as Armenian consumers did not demand strict health standards.
    - high salt content—a traditional characteristic of Armenian cheeses due to lack of pasteurization—was not suitable for the tastes of international consumers.
    - food safety and sanitation affected cheese quality.
    - there was a lack of food laboratories to test cheese coliform (bacteria) levels
    - Armenians opposed selling bulk, private label cheese for export.

- At the market level:
    - insufficient supply for market demands
    - lack of proper packaging and labeling for international markets
    - while there was a market in Southern California and Moscow, both markets were controlled by a limited number of cheese importers/ brokers
    - few wholesalers existed for negotiating best prices

Conclusion

After the collapse of the Soviet Union, Armenia's infrastructure suffered dramatically. The agricultural sector had to be rebuilt and the entire supply chain developed. The ARID Goat Center and the establishment of a viable commercial goal industry was a project the USDA Marketing Assistance undertook to assist the agricultural sector. This project taught three valuable lessons: (1) With solid market research, an entire industry can be started and thrive in a short time; (2) Using the development model of the U.S. Department of Agriculture's Marketing Assistance Project in Armenia—comprised of offering an integrated package of technical, marketing, and financial assistance—an agricultural subsector can grow to supply new products not only for domestic but international consumption; (3) Every link in the marketing chain, from farm-gate to fork, must be developed to shift from domestic to international marketing. This must be accomplished with the latest technical assistance offered to committed local partners over a consistent, long-term period. Future research of the Armenian goat industry should analyze the long-term impact and sustainability of outside intervention at the community, regional, and national levels. It is hoped that this paper will assist such efforts in the continued study of Armenian rural development.

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