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### **Connectivity: Food For Thought**

Located Southeast of the Himalayas between China and India, the Kingdom of Nepal, or Nepal is the home of over 29 million people. (Central Intelligence Agency, 2017) By world standards this is considered a poor country. More than one-third of the total households do not have a toilet and many lack indoor plumbing. (World Bank Group, 2016) The low amount of income Nepali people earn has led the country to a state of great poverty with 25.2% of the county's population living under the national poverty line. (Asian Development Bank, 2017) It goes without saying that the Nepali people live very different lives than the lives we are used to as Americans.

Despite being a small, landlocked country, roughly the size of New York state, Nepal is very diverse in terms of topography. Mountains and rugged hills cover almost 75% of Nepal's land area, and beyond the mountains exists the tropical region of Tarai. The Himalayan Region (north) contains 202 mountains rising to more than 19,685 ft. and 13 mountains rising to more than 26,246 ft. high, including Mt. Everest, the world's highest mountain at 29,035 ft. (Encyclopedia Britannica, 2017)

Nepal, long under the rule of hereditary prime ministers favouring a policy of isolation, remained closed to the outside world until a palace revolt in 1950 restored the crown's authority in 1951; the country gained admission to the United Nations in 1955. In 1991 the kingdom established a multiparty parliamentary system. In 2008, however, after a decade long period of violence and turbulent negotiation with a strong Maoist insurgency, the monarchy was dissolved, and Nepal was declared a democratic republic. (Encyclopedia Britannica, 2017)

Due to centuries of geographic and self-imposed isolation, Nepal is one of the most underdeveloped nations of the world. In recent years many countries, including the United States, have provided economic assistance to Nepal. (Encyclopedia Britannica, 2017) There are also hundreds of organizations which provide support as well as physical volunteers

The Ministry of Health is responsible for the support and administration of public health services, including hospitals and health clinics. Even though the government has taken steps to improve existing health centers and clinics and to establish new ones, health care remains inadequate. Many diseases are prevalent in spite of government projects to control or eradicate them. Ayurvedic medicine (ancient natural medicine) is the traditional Hindu system of medicine and is widely used in Nepal.

The typical Nepali family consists of an average of 4.2 members. 81% of the population are considered Hindu. The mainstay of their diet is rice, which are the primary crops. (Nepal Demographic and Health Survey, 2016) Over 3 out of 10 families are led by women. Almost all Nepalese live in villages or in small market centres considered to be rural. In addition, a few townships have begun to emerge in the foothills and hill areas, where economic activity has developed. (Encyclopedia Britannica, 2017)

Nepal is an agricultural country having 66 percent people directly engaged in farming. Farming consists of crop production integrated with livestock. (Nepal Food and Agriculture Organization, 2017) The primarily cultivation of rice, corn, and wheat, millet and soybeans engages most of Nepal's population and accounts for well over half of the country's export earnings. Agricultural productivity is very low. The low yields are the result of fertilizer shortages, no improved seed and inefficient farming practices. The country consists of rugged terrain and the weather can be uncertain. Only a very small percentage of

cultivated land is irrigated. Cattle, buffalo, goats, and sheep are the primarily produced livestock. The sale of livestock and livestock products such as meat, eggs and live animals help provide income for farm families. (Nepal Food and Agriculture Organization, 2017)

In 1939 the Government of Nepal established the Department of Livestock Services as a veterinary facility which was transformed shortly thereafter into a Veterinary Hospital. In 1966 it became the Department of Livestock Development and Animal Health. It implemented various livestock development programs like animal health, nutrition, breeding management etc. 75 district livestock development offices were opened around the 7 Provinces of the country. Service centers, regional labs and new breeding farms were established. This section of the government went through many changes over the years. Due to managerial problems and issues in program implementation, it was then named as Department of Livestock Services in 1995. (Department of Livestock Services, 2016)

The United Nations reports that Nepal has a small surplus in food grains even though there are major inconsistencies between supply and demand. Periods of shortage between harvests of various crops occur in the mountain areas. Large amounts of food grains are moved to India from the Tarai region. Because of the lack of adequate transportation, surplus food grain from the Tarai does not move north into the food deficient areas of the mid-mountain region. (United Nations, Food and Agriculture Organization, 2017) Because of the high population concentration in this region, almost all land capable of cultivation is tilled. Increasing the cultivated land area by cutting into standing forests aggravates erosion and results in reduced yields and land losses by landslides. (Encyclopedia Britannica, 2017).

In 2015, a 7.8 magnitude earthquake struck Nepal with a series of strong aftershocks triggering avalanches in the mountains. It was the worst earthquake to hit Nepal in 80 years. The estimated death toll exceeds 8,000 and many more were injured. Soon thereafter, a second large earthquake struck Nepal, again with strong aftershocks. The destruction of buildings, roads and other infrastructure will make rebuilding a long-term challenge as well as compound the difficulty resolving current problems. (Nepal, Food and Agriculture Organization, 2017)

In an interview with Daniel Laney, Director Emeritus of the American Dairy Goat Association and a USAID Farmer 2 Farmer Volunteer, currently working in Nepal with Dairy Goat Producers, the three greatest concerns in Nepalese livestock production are 1. Feed and Forage availability 2. Parasite control 3. Inbreeding. He states that there are substantial increases in donations of agricultural equipment and much needed money, but still a long way to progress.

Issue 1. Feed and Forage: There is little to no transportation to move grains from the main growing region in the South to the North or the mid-level mountain region. This applies to animal grains as well as grains for human consumption. All farmers endeavoring to raise livestock experience the challenge of feeding their animals to maintain health and vigor.

Issue 2. Parasite control: is a concern for all developing nations. Nepal, being an impoverished country has difficulty providing healthcare for humans, much less for livestock. According to Laney, due to lack of chemicals and pharmaceuticals, the farmers struggle to treat their animals and must rely on natural preparations and botanicals. Owning livestock on small parcels of land does not allow for parasite control through basic pasture rotation.

Issue 3. the problem of inbreeding. This problem is not only due to the country lacking sufficient infrastructure to easily transport breeding animals long distances the Nepalese people have received generous donations of foundation breeding stock. In most cases, one donor or donor organization

provides closely related animals to entire regions. (Daniel Laney) Although magnanimous, these animals begin as closely related and compound inbreeding with each subsequent generation. Neighboring farmers relying on each other for replacement stock, this perpetuates inbreeding.

I feel strongly that the most beneficial solution for the Nepalese people and successful animal agriculture is through education via technology. The feasibility of transporting teams of educators around the country would be cost prohibitive for a poor government or its people. Due to the fact that Nepal lacks the necessary transportation to bring the population to attend educational classes and workshops, the most efficient way to provide information and the most current research is through the use of the internet.

As of 2017 the percentage of Nepal's population with access to the internet has risen above 60%, up from only 19% in 2012. (Reuters, 2017) As internet access grows throughout the country, so grows the ability to educate more and more farmers. People can learn how to produce more food and alternative forages for their livestock; which in turn provides more food and income for themselves. According to the Government of Nepal's 2015 Broadband Policy, plans of using an optical fiber network to connect all 75 Nepali districts are on track to meet their deadline of 2020. That deadline is now only two years away. With the provision of internet services, the Ministry of Livestock must install public information systems in each and every district.

Mississippi State University Extension Service uses a system of electronic video conferencing. This allows a program to be delivered to locations all across the state from one main location. The video system is interactive, allowing the participants to participate in the presentation and even ask questions. Although the initial investment in equipment might push the boundaries of the government's budget, the results would be significantly less than sending individuals around the country, one at a time. Livestock owners and producers can make their way to somewhat convenient locations to attend informational workshops. Classes and seminars can be taught by experts from around the world. This process can reach more people with less expense and fewer man hours of educators.

New research is becoming available daily. New studies on feed and forage utilization, readily available natural and ayurvedic parasite control and health management, genetic education to reduce inbreeding, making the internet an even more valuable resource for producers. Knowledge allows for better care of stock and a greater self sufficiency.

Meeting the increasing food demands of a rapidly expanding world population must rely on agriculture. Protecting the ecology while using wise farming practices and good stewardship of available resources are an absolute necessity to improve agricultural productivity as well as ensure positive economic growth for developing countries. (United States Government Aid Organization, 2018) Knowledge is the most powerful weapon to fight hunger and it's time to connect the people.

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