

Hawley Brent
West Central Valley High School
Stuart, IA
Mexico, Factor 8

Mexico: Implementing Sustainable Practices for Raising Livestock and Poultry

Mexican family is the building block of Mexican society. The families in Mexico are quite close knit, with extended families being the traditional normal. It is not uncommon to find both in the rural and urban areas, three generations or even more, residing in the same household. Most of the Mexicans are usually seen to maintain links with their extended family members like in laws, aunts and uncles. However, nuclear families are equally important in Mexico. During family centric occasions most of the family members across generations, celebrate and enjoy together. It is a common sight in Mexico to see teenagers and children dancing and merrymaking along with their grandparents. The importance accorded to Mexican family is portrayed through the fact that the Mexicans frequently arrange family vacations and picnics.

The amount and size of crops depends on where the land is located. For instance the lowlands of Chiapas can grow two corn crops a year where as the highlands can only grow one. While a lot of land is cultivated 35.9% of the land in Chiapas is uncultivated pasture ground. (Richardson) A normal farm might spend most of their time and obtain most of their food by growing corn, beans, and squash and maybe a few other things (tomatoes, herbs, peppers, fruit trees) but they might also have some chickens, turkeys, ducks, and maybe something larger like a donkey or even a cow. And they might gather some wild foods or herbal medicines as well.

Sustainable agriculture integrates three main goals-environmental health, economic profitability, and social and economic equity. Sustainability rests on the principle that we must meet the needs of the present without compromising the ability of future generations to meet their own needs. Therefore, stewardship of both natural and human resources is of prime importance. Stewardship of human resources includes consideration of social responsibilities such as the needs of rural communities, and consumer health and safety both in the present and the future. Stewardship of land and natural resources involves maintaining or enhancing this vital resource base for the long term. The country of Mexico is a very diverse culture; and it needs a multitude of different agriculture economies.

For farmers, the transition to sustainable agriculture normally requires many small steps. Family economics and personal goals influence how fast or how far participants can go in the transition. It is important to realize that each small decision can make a difference and contribute to advancing the entire system further on the "sustainable agriculture continuum." (H. Losada)The key to moving forward is the will to take the next step.

It is important to point out that reaching toward the goal of sustainable agriculture is the responsibility of all participants in the system, including farmers, laborers, policymakers, researchers, retailers, and consumers. Each group has its own part to play, its own unique contribution to make to strengthen the sustainable agriculture community.

In Mexico over seventy-six percent of all inhabitants live in urban areas. Although city development has most generally followed a more "western" model, Mexican culture has always integrated agriculture and animal production as part of their daily lives. (Richard Margoluis) Since Mexico City is continually growing, some peoples have found a way to use new technologies and the city's organic wastes. Many people have developed small scale stables or dairy businesses. These businesses range in various technologically advanced stages. Some dairies are still milking by hand. A lot of the farming practices

that are almost obsolete in the United States are still used widely, not only in Mexico, but around the world. Even though Mexico is a growing population, of all the people in Mexico only 13.7% work in an agriculture field.

Optimum diversity may be obtained by integrating both crops and livestock in the same farming operation. Mixed crop and livestock operations have several advantages. First, growing row crops only on more level land and pasture or forages on steeper slopes will reduce soil erosion. Second, pasture and forage crops in rotation enhance soil quality and reduce erosion; livestock manure, in turn, contributes to soil fertility. (Feenstra) Third, livestock can buffer the negative impacts of low rainfall periods by consuming crop residue that in "plant only" systems would have been considered crop failures. Finally, feeding and marketing are flexible in animal production systems. This can help cushion farmers against trade and price fluctuations and, in conjunction with cropping operations, make more efficient use of farm labor.

Many inputs and practices used by conventional farmers are also used in sustainable agriculture. Sustainable farmers, however, maximize reliance on natural, renewable, and on-farm inputs. Equally important are the environmental, social, and economic impacts of a particular strategy. Converting to sustainable practices does not mean simple input substitution. Frequently, it substitutes enhanced management and scientific knowledge for conventional inputs, especially chemical inputs that harm the environment on farms and in rural communities. The goal is to develop efficient, biological systems which do not need high levels of material inputs.

Of Mexico's 1,972,550 Sq. Km, only eleven percent of land is arable. Since Mexico is part desert it has a hard time keeping land irrigated. With that being said actually only three percent is irrigated with a permanent form of irrigation. Of the land that is arable Mexico produces, corn, tomatoes, sugar cane, dry beans, and avocados; along with many other diverse produce. Structural inefficiencies that have existed for decades continue to limit improvements in productivity and living standards for many in the agricultural sector. (Affairs)

Diversified farms are usually more economically and ecologically resilient. While monoculture farming has advantages in terms of efficiency and ease of management, the loss of the crop in any one year could put a farm out of business and/or seriously disrupt the stability of a community dependent on that crop. By growing a variety of crops, farmers spread economic risk and are less susceptible to the radical price fluctuations associated with changes in supply and demand.

Mexico's main livestock enterprises include beef, poultry, pork, and dairy. Including livestock in the farming system increases the complexity of biological and economic relationships. The mobility of the stock, daily feeding, health concerns, breeding operations, seasonal feed and forage sources, and complex marketing are sources of this complexity. Therefore, a successful ranch plan should include enterprise calendars of operations, stock flows, forage flows, labor needs, herd production records and land use plans to give the manager control and a means of monitoring progress toward goals.

The animal enterprise must be appropriate for the farm or ranch resources. Farm capabilities and constraints such as feed and forage sources, landscape, climate and skill of the manager must be considered in selecting which animals to produce. For example, ruminant animals can be raised on a variety of feed sources including range and pasture, cultivated forage, cover crops, shrubs, weeds, and crop residues. There is a wide range of breeds available in each of the major ruminant species that, in general, have lower growth and milk production potential, are better adapted to less favorable environments with sparse or highly seasonal forage growth. Breeds such as the Milking Devon which are

a medium sized triple-purpose dairy cattle breed that has adapted to survive on a low-quality, high forage diet under severe climatic conditions.

Feed costs are the largest single variable cost in any livestock operation. While most of the feed may come from other enterprises on the ranch, some purchased feed is usually imported from off the farm. Feed costs can be kept to a minimum by monitoring animal condition and performance and understanding seasonal variations in feed and forage quality on the farm. Determining the optimal use of farm-generated by-products is an important challenge of diversified farming.

Use of quality germplasm to improve herd performance is another key to sustainability. In combination with good genetic stock, adapting the reproduction season to fit the climate and sources of feed and forage reduce health problems and feed costs.

Most adverse environmental impacts associated with grazing can be prevented or mitigated with proper grazing management. The number of stock per unit area (stocking rate) must be correct for the landscape and the forage sources. There will need to be compromises between the convenience of tilling large, unfenced fields and the fencing needs of livestock operations. Use of modern, temporary fencing may provide one practical solution to this dilemma. The long term carrying capacity and the stocking rate must take into account short and long-term droughts. Properly managed grazing significantly reduces fire hazards by reducing fuel build-up in grasslands and brush lands. The manager must achieve sufficient control to reduce overuse in some areas while other areas go unused. Prolonged concentration of stock that results in permanent loss of vegetative cover on uplands or in riparian zones, which are vegetative buffer strips along bodies of water, should be avoided. However, small scale loss of vegetative cover around water or feed troughs may be tolerated if surrounding vegetative cover is adequate.

A systems perspective is essential to understanding sustainability. The system is envisioned in its broadest sense, from the individual farm, to the local ecosystem, and to communities affected by this farming system both locally and globally. An emphasis on this allows a larger and more thorough view of the consequences of farming practices on both human communities and the environment. It also gives us the tools to explore the interconnections between farming and other aspects of our environment. A systems approach implies interdisciplinary efforts in research and education. This requires not only the input of researchers from various disciplines, but also farmers, farmworkers, consumers, policymakers and others.

The sustainability of Mexico is dependent upon Mexico, because the attitude of the culture has to reflect its needs and wants. Mexico also has a lot of potential in feeding byproducts from the crops to their herds and poultry as a feed source. The United States and other countries have many resources they could utilize in aiding Mexico, and alleviating some of the pressures of fighting world hunger. The best way to fight the food source is to start locally and work globally.

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