

Abigail Sanders
Oark High School
Oark, AR
Peru, Factor 7: Animal Agriculture

Peru: Guinea Pig, It's What's for Supper

In the modern world, we face many problems on various planes. Social and economic difficulties arise around the world but one of the biggest and most pressing problems we face is being able to feed a growing population. The country of Peru is no exception to this new task. With a lack of arable land and adequate space to raise large livestock, the need for a suitable alternative food source arises. Through extensive research, the conclusion that guinea pigs can be used in a backyard setting and paired with a small garden as a viable means of feeding a family becomes a real possibility.

The country of Peru is located in Western South America bordering the South Pacific Ocean. The population is an estimated 30,147,935 citizens and the total area of the country is approximately 1,279,996 square kilometers, making it slightly smaller than the state of Alaska.

Peruvian families are tight-knit communities. The average family size is 5.1 persons per household. Urban families are typically slightly larger, however I'd like to concentrate on the rural family that usually has an average 4.9 persons per household. Fathers usually assume the role of household authority, but women sometimes assume this role in urban as well as rural families. Peruvian law requires the use of both paternal and maternal names in a child's identity, showing equal importance of parental lineage. Women are often the party responsible for providing food for the family and also taking care of household chores. In rural areas, over 50% of households must complete their daily tasks without the help of modern appliances (Palmero). While poverty rates have dropped in the last decade, it is still high at approximately 30%. A rate of 55% or more can be found in rural areas.

The typical diet of a rural Peruvian family depends largely on the geographical and socioeconomic aspect of the particular family. The diet of those in the Andean mountain region varies from the diet of families in the coastal and rainforest areas. While the mountainous terrain and climate of the Andes does not permit heavy agricultural production, the potato, a vegetable that originates in the region, remains a staple good and is used in most common dishes. Other crops of the region include onions, beans, wheat, barley, and maize. After the introduction of governmental regulations and assistance, malnutrition rates have started to drop since 2005 (Central Intelligence Agency). According to Agri Cultures Network, "In Peru there are about 21 million guinea pigs. Annually 65 million animals are slaughtered, which produce 16.500 tons of meat, which is about 6.5% of the total meat production". They also state that they are mostly consumed by the rural population and provide a vital source of protein.

School enrollment has improved, however many children are currently unenrolled or have dropped out of school to help support their families. One quarter to one third of children aged 6-14 work, often in dangerous jobs such as mining and construction (Central Intelligence Agency). Only wealthier families are able to send their children to private schools. Just 2.8% of Peru's GDP is spent on education. The majority of the poor communities in the Andean region do not have access to a formal education and literacy rates are very low. However, 89.6% of people in the country age 15 and over can read and write.

According to the CIA, in 2011 statistics showed that "4.8% of GDP went toward health expenditures with a physicians density of 0.92 physicians/1,000 populations (2009)". Yellow fever, malaria, and other highly

infectious diseases are a concern in the country, but a decentralized health care system and the implementation of universal health insurance (*Es Salud*) has made healthcare more accessible. Distribution of health care into rural areas is becoming less of a concern as the SERUMS plan is put into action to distribute health care into less served areas (World Health Organization).

A mere .66% of land is used for permanent crops while 2.84% is arable land, and 11,960 square kilometers is irrigated in the country as a whole.(Central Intelligence Agency) In the mountainous region, fields are often far away from the home, making travel necessary. Many farms are considered “chacras”, which translates to small farm/ranch, hinting that most are of smaller size. Some farmers stay in huts near the chacra for several days before returning home. People of the region commonly make and use their own tools and do not rely heavily on outside resources. Most rural farms utilize unpaid family labor, but may require assistance from relatives and neighbors during times of increased labor needs. Only 1.7% of the country is used significantly for agriculture compared to Spain with 13.2% and France with nearly 20%. (Rural Poverty Portal) Livestock typically found in the Andes are native species such as the South American camelids (alpacas, vicuñas, and llamas), guinea pigs, sheep, and pigs. Cattle production is limited and localized to certain regions. Guinea pig is considered valuable in the Andean region for not only its meat, but it is also used by medicine men to rid the people of disease and curses (Livestock in Peru).

Currently, several agricultural programs are being implemented in Peru. INMED, an organization previously focused solely on providing resources for children, has expanded to tackle global issues. In Peru, they have implemented aquaponic systems. This operation is providing food in an effective way on a small scale, and would pair well with a guinea pig operation. Collaboration with this organization could prove to be useful and effective. Partnering with other organizations such as this one that are already established would most likely benefit this project the most.

The main barriers facing the typical Peruvian family are natural disasters, extreme environmental conditions, difficult access to food, and low educational levels. Specifically in the Andean mountain region, earthquakes, landslides, and forest fires have been a concern. This complicates agricultural production and causes land to become unusable or unsafe. According the UN Trust Fund for Human Security, “recurrent natural disasters had triggered a progressive loss of capacities and livelihoods by further jeopardizing access to basic health services, undermining already poor housing conditions, and stifling economic opportunities both within and across communities.”

Extreme weather conditions in the country of Peru are common. The geography of the country and the placement of the Andean mountains form different climates within the country as well. Extreme conditions caused by the El Niño cycle have played a prevalent role in the country’s affairs. Excessive rainfall commonly causes devastating landslides as mentioned before. Also, the standing water that follows harbors the potential for deadly diseases and unsanitary conditions. Flooding can ruin crops and cause difficulty reaching safe food and water.

Difficult access to food is a condition that most do not consider when thinking of Peru. The country is known for its unique and varied cuisine. But the fact is that almost 35% of Peruvians don’t reach the minimum daily caloric requirement according to the United Nations Development Programme. Most do not have access to nutritious food, but instead snack foods high in carbs and fats especially in the urban regions. Many activists seek to give more support to the farmers to increase the production of food within the country. Peru imports 90% of its wheat, 60% of its corn, and 100% of its soybeans which makes it vulnerable to market changes and trade difficulties. However, guinea pigs can provide a considerable

amount of protein in comparison with a large livestock operation and could be locally sourced. With two males and 20 breeding females, a family of four can be provided with 160-200 offspring a year, meeting their dietary protein requirement (EatTheWeeds.com).

Education in Peru is available to those from 7-16 in theory, but this is largely not the case, especially in rural areas. Lack of transportation and other duties related to family life keep many children from an education. While 89.6% of the population above the age of 15 can read and write, only 84.6% of females are literate (Central Intelligence Agency). This withholds several families from attaining jobs and educating their children.

The incorporation of guinea pig production on a small scale near the home could increase agricultural productivity, household income and food availability and quality in the country of Peru. In rural regions such as those of the *Narino* highlands, guinea pig production is already a common practice and an important source of protein. However, if incorporated to both rural and urban environments, families could become more self-sufficient and rely less on bought food that is typically less nutrient dense.

Currently, guinea pig production is inefficient and therefore prices are very high to consumers who do not produce their own stock. A 1974 Dutch bilateral project investigated agricultural production in Peru. They compared the production of guinea pigs to other livestock such as swine and poultry and found that the cost of feeding and housing guinea pigs is much less than other livestock. If families were to produce guinea pigs in an efficient, cost-effective, and safe way, it could potentially become the primary source of protein for families in Peru, create a market environment for guinea pigs, and provide a small income for guinea pig producing families.

Only 2.84% of land in Peru is arable, making large scale crop production not very feasible. Most farms are small, rural farms that are worked by individual families. Therefore, most families do not have adequate space to effectively produce larger livestock for their family. While malnutrition rates are falling, this can be partially contributed to the efforts of government programs. As discussed earlier, many urban residents do not receive their minimum caloric intake. The food that is widely available in cities is low in nutrients and high in carbs and fats making those in an urban setting particularly disadvantaged due to an inability to produce large livestock and crops.

The trends for animal production are in a state of constancy for the most part when measured by change in production practices. Small scale production is still common. While malnutrition rates are falling, again it is due mostly to government assistance, reducing the self-sustenance of urban families in particular. Because of potentially unchanging conditions, rural families will not be able to increase production and adequately provide for their family as well as the market, and urban families may fall back to reliance on non-nutritious food and imported products.

Improving the production of guinea pigs and incorporating it into both rural and urban households would provide a steady food source for families. Excess stock could be sold for a profit and create a greater market for guinea pigs, making it less expensive and rare. Guinea pig production is sustainable and environment friendly; they can be housed in small areas and do not require valuable farm land for production. While the initial investment is fairly costly, they can be fed with roughage and take up a small amount of room unlike larger livestock. The efficiency and ease of caring for the guinea pigs will lessen the burden on women who have to maintain the household and provide food for their families.

Guinea pig production is not likely to be majorly affected by issues prevalent in Peru. While the climate is volatile and varied in the different regions, guinea pigs are hardy animals and can easily be moved to more suitable areas out of wind and other conditions. Unlike larger animal production, population growth and urbanization will not largely affect the production of guinea pigs. Because they can be raised virtually anywhere with enough space for the cage and supplies, every backyard could be the site of production.

Water scarcity and energy demand would play little role in production. Water required is in very small amounts and energy is not necessary. Guinea pig operations are not likely to have a negative effect on the environment or cause pollution with proper waste disposal and education.

However, problems that could be anticipated with a guinea pig operation would include disease and the amount of stock needed to feed a family. Guinea pigs are highly susceptible to respiratory infections. With wet weather being a common part of the Peruvian climate, this could pose a problem. However, purchasing stock already accustomed to the conditions would help to eliminate this possibility.

This project doesn't require a large amount of technologies to achieve its purpose. However, access to technology for educational purposes and as a means of getting questions about production answered would increase the success of individuals who raise guinea pigs. Technological devices are fairly prevalent in urban settings, however in a rural setting, access to this resource is limited.

The recommendation that will most be most beneficial in the development of this project is to educate producers so that they can maximize efficiency and maintain self-sufficiency. Guinea pig manure is suitable for use as a garden fertilizer, so guinea pig production could be effectively paired with a small garden that could provide for both the family and livestock. Start-up investments will be the most difficult aspect, however building a basic cage that meets the needs of the family with excess for market can be done for fewer than 40 dollars. Seed stock will also be a beginning expense, however after attaining brood stock, they will reproduce at a rate of about every 5-6 months. I recommend directing education towards women since they will be the most important factor in maintaining production. It would also strive for Millennium Development Goal 3: Promote Gender Equality and Empower Women. This effort will also strive to satisfy Goal 1: Eradicate Extreme Poverty and Hunger by feeding families. Because of the ease of caring for domestic guinea pigs, parents will be able to maintain jobs, and children will be able to get an education, which will satisfy Goal 2: Achieve Universal Primary Education. This will apply specifically to rural families who commonly have to travel long distances to find work and stay away from home for periods of time. This project could easily be expanded in the event of higher income or increased space. It's also highly mobile, and the cages could be moved to a new location.

The role of communities, the national government, corporations, and other organizations will all have to work in unison to achieve placing small-scale guinea pig production in the backyard of millions. In local communities, groups of families can form a trade network to ensure quality stock with varied genetics. Currently, inbreeding due to a lack of separation in cages and new breed stock causes offspring of inferior quality. This could easily be solved with the buying and trading of stock within communities. The national government will play one of the most vital roles in starting production. The cost of wire, cage clips, sheet iron, and other products needed to build cages and equipment will be a barrier to entry for many producers. To solve this, government grants, low interest micro-loans, and discount programs would ease the start-up costs associated with raising guinea pigs. The government could also distribute publications that educate the public about programs available to beginning farmers. Other organizations will play both instrumental and supplemental roles. Those such as Heifer International have already been activists for sustainable agriculture in Peru. They can bring guinea pig production to more and more people, making it a widespread effort. Research agencies that focus on agriculture and improving technology could complete studies in the country and find ways to maximize production. Economically, organizations such as World Bank that focus on ending poverty can offer loans if the government is unable. Rural farms and urban families will play the biggest role of all. They will have to take initiative to seek financial help and education if needed. Each family is different and each situation is unique, so the details of production will come with experience. The women of the family will specifically be affected as taking care of the stock will likely be delegated as their responsibilities.

While this project may be small scale and seem insignificant, it can provide life-saving agricultural advancements for millions. Women will be involved in providing for families. Men will be able to more

easily attain jobs away from the household. And all of this will lead to better education for children, as they won't have the responsibility to provide for their family. But without action, no plan will be effective. Education will have to be implemented for Peruvian families. Start-up costs will be high, however with the assistance of government and worldwide assistance, producers will be able to begin to work towards self-sufficiency. With all of these factors achieved, the nation of Peru will see significant improvements worthy of a guinea pig supper.

Works Cited

- Agency, Central Intelligence. "The World Fact Book." Central Intelligence Agency. Central Intelligence Agency, n.d. Web. 27 Feb. 2015.
- Bland, Alastair. "From Pets To Plates: Why More People Are Eating Guinea Pigs." NPR. NPR, 02 Apr. 2013. Web. 07 Mar. 2015.
- Blazes, Marian. "Peruvian Guinea Pig - Traditional Andean Cuy." About Food. About Food, n.d. Web. 09 Mar. 2015.
- Deane, Green. "Guinea Pigs, Cavy, Cuy." *Eat The Weeds*. N.p., n.d. Web. 02 Aug. 2015.
- Ford, Jessica. "Pigs, Potatoes and Progress in Puno, Peru." Donor Stories. Heifer International, n.d. Web. 09 Mar. 2015.
- "Guinea Pigs - Problems." *VCA Animal Hospitals*. VCA Animal Hospitals, n.d. Web. 02 Aug. 2015.
- INMED. "Peruvian Adaptive Agriculture Program." Inmed.org. INMED, n.d. Web. 2 Aug. 2015.
- Koeslag, Johan H. "The Guinea Pig as Meat Producer." *Agri Cultures*. Agri Cultures, Apr. 1989. Web. 07 Mar. 2015.
- "Livestock (in Peru)." *Livestock. Welcom' In Peru*, n.d. Web. 09 Mar. 2015.
- Nations, United. "United Nations Millennium Development Goals." UN News Center. UN, n.d. Web. 06 Mar. 2015.
- Organization, World Health. "Peru." WHO. World Health Organization, n.d. Web. 09 Mar. 2015.
- Palmero, Paolo. *Natural Disasters in Peru: From Damage Limitation to Risk Management and Prevention (2012)*: n. pag. UNOCHA. UN Trust Fund for Human Security, 14 June 2012. Web. 07 Mar. 2015.
- "Peru Has a Hunger Problem." *Peru This Week*. Trans. Rachel Chase. Peru This Week, 13 Mar. 2013. Web. 09 Mar. 2015.
- Phipps, Nikki. "Using Guinea Pig Manure As Fertilizer In The Garden." *Gardening Know How*. Gardening Know How, 01 Jan. 2015. Web. 09 Mar. 2015.
- Portal, Rural Poverty. "Rural Poverty in Peru." Rural Poverty Portal. Rural Poverty Portal, n.d. Web. 09 Mar. 2015.
- Programme, World Food. "Hunger Map 2014." (2014): n. pag. World Food Programme. Web. 9 Mar. 2015.
- "World Bank: About." World Bank. World Bank, n.d. Web. 02 Mar. 2015.
- "WFP Activities." WFP. World Food Programme, n.d. Web. 09 Mar. 2015.