
RESEARCH REPORTS AND NOTES

THE GUINEA PIG IN THE ANDEAN ECONOMY: From Household Animal to Market Commodity*

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The guinea pig (*Cavia porcellus*) has been raised and consumed throughout the Andean subregion since before the arrival of Spaniards in America. According to sixteenth-century native chronicler Felipe Guaman Poma de Ayala, the Incas and the indigenous peoples who preceded them used the guinea pig, or *cuy*, for ceremonial purposes (Guaman Poma de Ayala 1980, 55). Hundreds of years later, on the brink of the twenty-first century, mass production of cuys outside their native habitat is turning these animals into an exchange commodity that is generating many economic activities.

Although colonial chroniclers as well as contemporary archaeologists and anthropologists have mentioned cuys in their works in passing, study of the cuy's role in the Andean traditional economy has so far been neglected. Literature on the cuy in the Andean culture and society consists of merely three journal articles and one book in Spanish. Ralph Bolton (1979) argued that in one small community in southeastern Peru, seasonal consumption of cuy meat at religious festivities is linked to the need for protein intake. Daniel Gade's short article (1967) described the connection between the cuy and Andean human ecology. Gabriel Escobar

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and Gloria Escobar (1976) presented an ethnographic account of folk practices in cuy raising in the department of Cuzco, Peru. Finally, Eduardo Archetti's (1992) detailed ethnographic book on the cuy in the Ecuadorian Andes seeks to understand the traditional cuy economy and its potentials for local, regional, and national economies, although the book falls short of documenting the economic significance of the cuy for Andean culture at large.

The emerging significance of the cuy in the Andean subregion warrants comprehensive study for many reasons. First, the high-protein, low-fat content of cuy meat is gaining acceptance among non-native populations. Second, the scientific community has successfully bred cuys that supply more meat faster than the traditional method. Third, raising, consumption, and exchange of cuys all play important roles in the Andean social order in that the emerging cuy economy connects the countryside with the city and people from different social strata and cultural backgrounds. Fourth, exploitation of the cuy follows the same pattern of other natural resources: populations who have preserved the cuy germ plasm for centuries are losing control of a significant cultural element to the capitalist economy.

The Cuy in Traditional Culture and Economy

Cuys are found widely in the Andes (see illustration 1). According to Peruvian archaeologist Luis Lumbreras, domestication of cuys and other animals and plants in the Andes may have begun about 5,000 B.C., followed by cuy diffusion north to the Caribbean and south to Chile (Lumbreras 1981, 135). Domestication of cuys probably began in the altiplano, where wild cuys (*Cavia aparea*) can still be found. Cuy may have been consumed extensively along with fish and shellfish on the Pacific Coast. Indeed, the existence of statues representing cuys originating in the Moche valley around 1400 A.D. in Peru and archaeological evidence in Salango, Ecuador, around 500 B.C. to 500 A.D. prove that cuys were raised on the coast (Stahl and Norton 1984).

The so-called guinea pig is a truly misnamed animal, being neither a pig nor from Guinea. It may not even be a member of the rodent family (see Graur, Hide, and Li 1991). One explanation of this misnomer is that the word *guinea* may be a corruption of Guiana, the South American country from which cuys may have been exported. Europeans may also have assumed that cuys came from the West African coast of Guinea, for they may have been imported from South America via the Guinea slave trade ships. Another possibility is that cuys may have been sold in England for a guinea (an English gold coin). Cuys became popular as pets all over Europe, and Queen Elizabeth I contributed to this pet fancy (MAG 1986). Although most Andeans call the animal "cuy," the Aymara

know it as *wanku* and *wankuchi*. In Bolivia, cuys are incorrectly called *conejo cui* (rabbit cuy), *conejo peruano* (Peruvian rabbit), or *conejo nativo* (native rabbit). In southern Colombia, they are known as *curi* and *huimbo* or *huiro*, in Venezuela as *acurito*, and in Cuba as *curiel*. In some parts of the Andes of Peru, cuys are called by the Quechua name of *jaca* (pronounced "haka"), *aca*, or *sacca* (in Junín), or *quwi* or *qowa* (in Cuzco). Many Ecuadorians believe that *cuy* is a Quechua word, but it is a Spanish word, although terms like *cuycocha* (lake cuy) combine the Spanish word with *cocha*, the Quechua word for lake.

The average adult cuy weighs about three-quarters of a kilogram (1.65 pounds) and measures about 30 centimeters in length (a little over a foot). It has no tail. Cuy fur can be smooth or coarse, short or long, and is curly in some varieties. The animals are commonly white, dark brown, gray, or combinations of these colors. Cuys are extremely prolific. Females can become pregnant at the age of three months and every sixty-five to seventy-five days thereafter. The period of estrus recurs every thirteen to twenty-four days and lasts for seven to eight hours. Post-parturition estrus, which takes place three or four hours after giving birth, is characteristic of female cuys, with about three-quarters of those who exhibit this behavior becoming pregnant again immediately (Aliaga-Rodríguez 1989, 3). Although they have only two nipples, female cuys can nurse litters of five to six pups without difficulty because of the high fat content of their milk (see table 1).

Cuy litters average three to four pups, although litters often range from one to eight (Gade 1967, 214; and Aliaga-Rodríguez 1989, 3). Cuys can live as long as nine years, but the average lifespan is three years. Because of their fecundity, seven females can produce as many as seventy-two offspring per year, netting a total of more than 35 kilograms (77 pounds) of meat (Charbonneau 1988, 7). Given ideal conditions, a farmer starting with one male and ten females could grow a flock of 361 animals in one year.¹ In practice, farmers who raise cuys for the market dispose of reproductive mothers following the third litter for several reasons. First, they expand to weights well over 1.2 kilos (2.6 pounds) and consume more feed than other cuys of comparable age. Second, the number of offspring in the fourth litter is usually no larger than that of the second or third litter, and the mortality rate for mothers rises after the third litter. Last, because of their weight, the younger mothers sell faster and bring higher prices (Moncayo 1992b, 1).

Cuys adapt extremely well to temperate zones and high mountains, although they are usually kept indoors to protect them from ex-

1. Information provided by Robert Moncayo, an authority on cuy breeding and farming, in a letter dated 4 Nov. 1993. This information disproves the U.S. National Research Council's claim that a farmer starting with one male and ten females could see his flock grow to 3,000 animals in one year (1991, 245).

TABLE 1 Content of the Milk of Cuy (Guinea Pigs) in Comparison with Other Mammals

Mammal	Water (%)	Albumins (%)	Fat (%)	Salts (%)
Cuy	41.1	11.2	46.0	0.6
Cow	86.0	3.8	3.7	0.6
Horse	89.0	2.7	1.6	0.5
Human	87.0	1.1	4.5	0.2

Source: Ecuador, Ministerio de Agricultura y Ganadería (MAG), *Estudio sobre la situación actual de la crianza de cuyes en la región interandina del Ecuador* (Quito: Junta Nacional del Acuerdo Cartagena y Programa de las Naciones Unidas para el Desarrollo, MAG, 1986).

tremes of weather. Their favorite feed is alfalfa, but they are often fed table scraps like potato peelings, carrots, grass, fresh corncoobs, and grains. Cuyes start eating forage or balanced feed only a few hours after birth, and thus the mother's milk is a supplement rather than their main diet. They get their supply of water from the forage.

Throughout the Andes, most families have at least twenty cuyes. About 90 percent of the total population of Andean cuyes is produced at the household level (Moncayo 1992a, 1). The kitchen is considered the place to keep them because of the common Andean belief that they need smoke. Some households have *cuyeros* or *jacapukus* (meaning cubbyholes or hutches in Quechua) built of adobe or reed and clay, or they may keep cuyes in detached small hutlike kitchens without windows. Although they can be raised at temperatures as high as thirty degrees Centigrade (eighty-six degrees Fahrenheit), the natural habitat seems to be places where temperatures fluctuate between minus seven and twenty-two degrees Centigrade (nineteen to seventy-two degrees Fahrenheit). Because of their adaptability to different altitudes, cuyes are found in areas as low as the rain forests and as high as 4,000 meters (more than 13,000 feet) above sea level. The cuy's physical adaptability thus allows commercial farmers or families to feed their flocks with forage available in the environment.

Cuyes are such an expected part of the Andean household that families who do not have cuyes in their kitchen are considered to be lazy or extremely poor. The traditional method of raising cuyes in the kitchen dates back hundreds of years, more technical exploitation being a fairly new activity. Until recently, scientific research on breeding better specimens and programs promoting cuy raising for local and national markets were not taken seriously in Peru and Ecuador. But now that the Ecuadorian and Peruvian governments have realized that the highland areas present excellent albeit varied geographical conditions, they are promoting more rational methods of raising cuyes in homes and communities

because of its superior nutritional capacity and economic potential. In Bolivia, cuys are still being raised in the traditional way.

Changes in Cuy Raising

Although the cuy's natural habitat is the Andes from northern Chile to southern Colombia, scientifically bred cuys from Peru have been introduced into many other countries, including the highlands of Honduras and the Dominican Republic. Luis Aliaga-Rodríguez (1989) reported that according to the Ministerio de Agricultura of Peru, there are twenty-one million cuys in Peru. Scientists at the Instituto Nacional de Investigación Agropecuaria y Agroindustrial (INIAA) calculate at least thirty million cuys in Peru.² The number of cuys in Ecuador is estimated to exceed ten million (MAG 1986). Koeslag estimates at least half a million cuys in the department of Nariño in southern Colombia (1989, 22). Cuys throughout Bolivia may number well over two million. Thus the cuy germ plasm is part of the Andean legacy (see illustration 1).

In 1967 scientists at the Universidad Agraria La Molina in Lima realized that new generations of cuys were smaller than previous generations. The reason was that highlanders were selling or consuming their bigger cuys and leaving the younger and smaller ones for reproduction. Researchers curbed this shrinking process by a simple method. They collected specimens from the departments of Arequipa, Junín, Ancash, and Cajamarca, where traditional cuisine uses cuy meat extensively. They then started a breeding program to counter highland practices by selecting the best specimens for reproduction. By the early 1970s, researchers at La Molina had bred cuys that weighed as much as 1.7 kilos (3.75 pounds) (Ayala-Loayza 1989, 78).

Since then, Peruvian university researchers have bred the biggest and meatiest cuys in the world. As noted, before scientific breeding, these animals averaged only 0.75 kilograms (1.65 pounds), but those emerging from the breeding program weighed close to 2 kilograms (or 4.4 pounds).³ When using balanced feed, a family could produce at least 5.5 kilos (12 pounds) of meat per month without decreasing its flock (Chauca and Zaldívar 1989). Cuys fed with forage only are not ready for consumption until they are fourteen weeks old, but if fed with balanced feed they can be culled for slaughter at ten weeks of age.

The INIAA experimental station at La Molina in Lima is playing a decisive role in breed improvement. Agronomists Marco Zaldívar and Lilia Chauca and their staff of three professionals have devoted more than

2. Zaldívar and Chauca, personal conversation, 10 July 1990.

3. In a personal conversation on 10 July 1990, Zaldívar and Chauca stated that there was only one case in Huancayo, Peru, in which a breeder produced a guinea pig weighing almost 3 kilos (6.5 pounds).

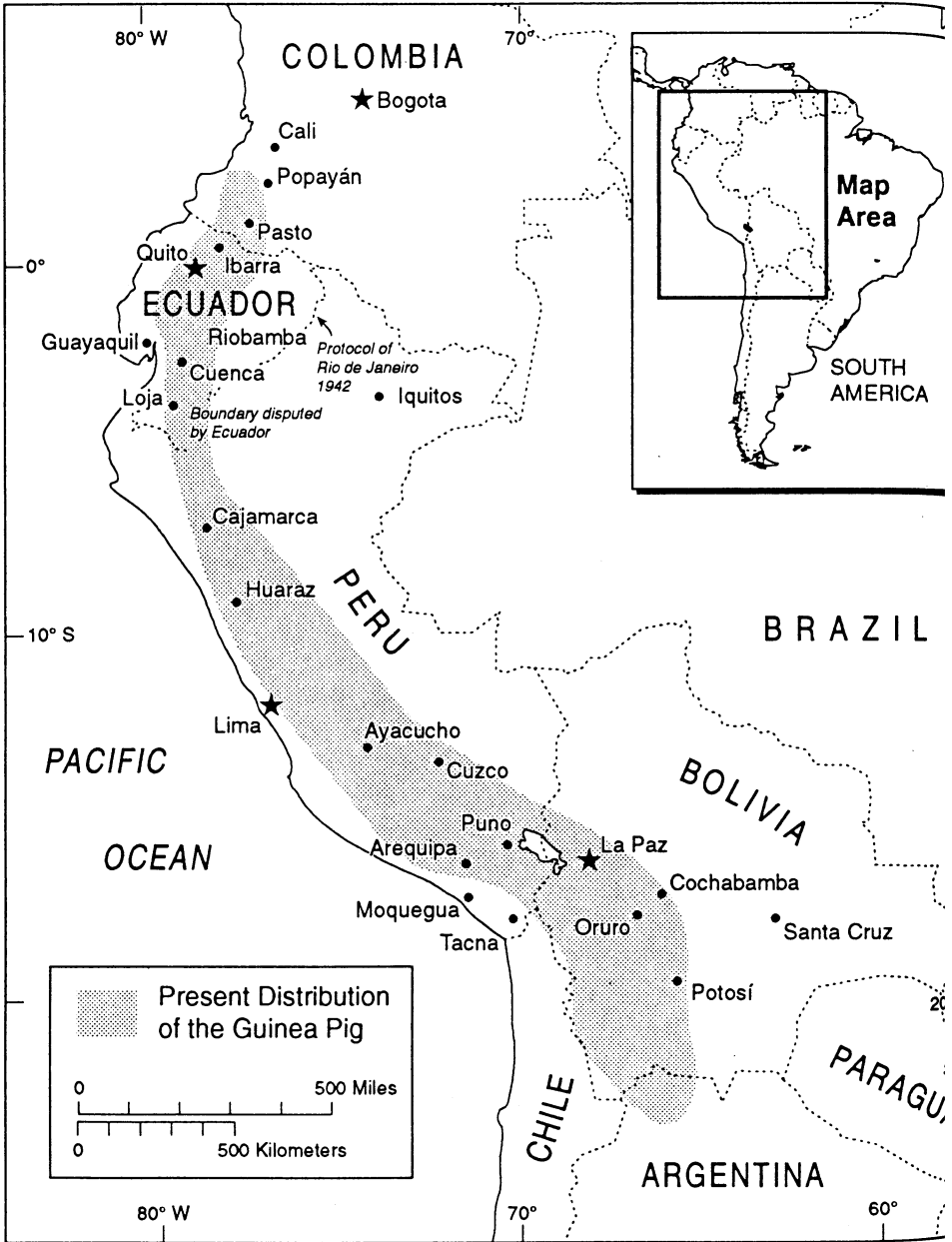


Illustration 1. Distribution of the guinea pig in the Andean countries, circa 1990

two decades to studying cuys. The INIAA station has opened branch stations in many cities and towns throughout the country that provide new breeds and technical assistance and support elementary schools, families, and small entrepreneurs. The team of technicians visit the farmers, families, and schools participating in the experiment weekly. New breeds of cuys and scientific direction, however, are provided only to small households and semi-industrial farmers.

With the support from national universities and international non-profit organizations, many Andeans are raising cuys to satisfy the ever-increasing demand for their meat. The INIAA in Peru and the Ministerio de Agricultura y Ganadería in Ecuador categorize cuy raising for the market into three levels: small or family; middle or semi-industrial; and large or industrial. Small or family-level producers (rural inhabitants with a maximum of 250 reproductive mothers) make little if any profit on the cuys they sell. Middle-level or semi-industrial producers have 250 to 500 reproductive mothers. Large or industrial-level farmers maintain flocks of 1000 or more reproductive mothers. Neither Ecuador nor Peru has compiled official statistics or even estimates of the numbers of producers in each category. Middle- and industrial-level cuy raising is concentrated in Ecuador in the highland provinces of Imbabura, Pichincha, Cotopaxi, Tungurahua, Chimborazo, Azuay, and Loja. Commercial raising of cuys is gaining popularity there, especially where land conditions are ideal for producing forage. In Peru, cuy raising is increasing in Arequipa, Huancayo, Ancash, Cajamarca, Huanuco, and Lima.

Due to a lack of other natural resources for meeting community needs, unique and systematic methods of raising cuys are being introduced in the highlands of Ecuador. The motivation is to earn cash to satisfy needs created by the modern world. This seminal approach is being financed and supported by the Office of International Development of the Belgian Ministry of Foreign Relations. The Proyecto de Desarrollo Comunitario Palmira operates out of the former hacienda of Totorillas, one of the largest private landholdings in the province of Chimborazo in feudal times. The project's goal is to work with target communities whose scarce natural resources and lack of appropriate technologies hinder their participation in the national economy. The project encourages and supports rational exploitation of plants and animals that are native to the Andes or have adapted to the environment, such as quinoa, potatoes, ocas, sheep, pigs, and cuys.

The Palmira project is staffed by three Belgian experts and nine Ecuadorian nationals (six specialists in agriculture and animal husbandry, two drivers, and one live-in caretaker). The six Ecuadorian specialists consist of two technicians and four outreach workers. The operating budget for the project is about \$1,000 (U.S.) per month, with technicians being paid the equivalent of \$150 per month and the outreach workers the equiv-

alent of \$80. Salaries of the three Belgian technicians, who are government employees assigned to the project, are deposited in Belgian financial institutions in dollars.

The project's geographical area includes four communities with some six hundred families spread out over five thousand hectares of land. Traditionally, families have kept cuys in their houses, even if only a one-room structure. In larger homes, cuys are usually raised in in the kitchen or if that area is not safe, in another room (see illustration 2). Because it is healthier for both animals and humans to keep cuys in a detached building or cage, the project's primary goal is to change the traditional method of raising cuys by providing material at no charge for building cuy boxes or cages in a space selected by the family outside the kitchen. Once the cuyero is ready, the project provides the family with one scientifically bred male cuy for every ten female cuys owned by the family in exchange for a traditionally raised male. The project's specialist in small mammals and the outreach worker assigned to the community visit the cuyeros regularly. Rather than lecture the peasants, project members answer their questions. The approach is to foster a sense of independence and teach techniques that may improve social conditions. The Palmira project's success is reflected in the fact that individuals and families have increased not only their flocks by many dozen but also the quality of their cuys. The project will continue to provide technical advice until participating families learn more rational methods of raising cuys.

In Tiocajas, one of the four communities participating in the Palmira project, a group of women representing about one hundred families in the community organized a cooperative on their own for raising cuys. The Palmira project provided this group with materials to build a two-story brick building about 300 meters from the road that leads to Cuenca, the third-largest city in Ecuador. The cooperative opened officially on 18 July 1992, and the entire community gathered to celebrate the event with music, drinks, and roasted cuys and lamb. This cooperative started out with twenty female and two male cuys donated by the Palmira project.

An experience similar to the Palmira project illustrates the dynamics of cuy raising in regional economies and the potential for social change. In 1974 the Dutch and Colombian governments signed an agreement authorizing Dutch technicians to help stimulate dairy production in the department of Nariño. The following year, the technicians realized that milk alone would not provide enough income and that local women were dedicating more time to cuy raising than to other activities. The technicians wanted to take advantage of this cultural tradition to strengthen women's position in the community. The Colombian agriculture ministry was not interested in this initiative, however, because cuys were not raised in other parts of the country. The project was adopted instead by the Universidad de Nariño and the Dutch group without much national support. The Dutch group



Illustration 2. Many Andean families share house space with their cuys to keep them safe from weasels, opossums, and foxes. This Ecuadorian household keeps its cuys under a platform bed. (Photo by Edmundo Morales)



Illustration 3. This vendor in Huaraz, Peru, buys cuys raised in traditional kitchens and then sells them in the marketplace. (Photo by Edmundo Morales)

and UNICEF provided small loans to several groups of women, inviting Peruvian technicians to give short training courses and import scientifically bred specimens from Peru. After cuy production became profitable, Colombian national banks offered small loans, and (as would be expected in a male-dominant society) men wanted to take over the marketing of cuys and let women continue to do the work. To prevent this tendency as much as possible, women organized the Asociación de Productores de Cuy (Asocuy), which is directed by women (Koeslag 1989, 23).

Today, although highlanders still value raising cuys for personal use, mass raising of cuys outside of the native habitat is turning these animals into a cash commodity. Many families and small entrepreneurs, especially those trained in animal husbandry or those who have discovered the promising market for cuys, are raising the animals to subsidize their salaries or as the chief source of income. Yet few are taking the economic potential of the cuy seriously. Throughout the Andes, few farmers have flocks larger than two thousand cuys (Moncayo 1992b, 1).

In Ecuador, one producer has set an example for the entire country, if not for the whole Andean subregion. Auquicuy (a name that in the Ecuadorian dialect of Quechua means "Prince Cuy") is located on the Hacienda El Rosario, near the small town of Salinas in the province of Imbabura, 1,650 meters above sea level (5,413 feet). The temperature ranges between sixteen and thirty-five degrees Centigrade (sixty-one to ninety-five degrees Fahrenheit). The hacienda has a total of 23.5 hectares of land, of which 17.5 hectares is planted with feed (14 hectares of alfalfa, and 3.5 hectares of king grass). Eight cuyeros and one 50-square-meter slaughter room occupy 2,951 square meters. The center features a complete and appropriate technology for cutting forage and mixing a balanced diet to feed the cuys and is supervised by ten full-time workers. Roberto Moncayo, an agronomist who graduated from the Escuela Agraria Panamericana in Zamorano, Honduras, began commercial exploitation of cuys in 1979 with 150 select females. In 1981 he introduced scientifically bred cuys from Peru and in 1983 imported 273 more cuys from three departments in Peru. Since then, Moncayo has developed his own breed by crossing the Peruvian cuys with Ecuadorian criollo cuys. Currently, Auquicuy has 5,500 reproductive mothers and a total of 13,000 animals.

From Household Animal to Market Commodity

Escobar and Escobar showed that cuy raising, exchange, and consumption play important roles in social order (1976, 36). These activities link the countryside with the city. This link is clearly observable in the open livestock marketplace in highland towns as well as in large urban areas. In large cities like La Paz or Lima, small urban merchants (usually

mestizos) transport cuys from the countryside to the market or supply restaurants that feature cuy meat as a specialty.

In Ecuador, in contrast to Bolivia and Peru, live cuys are not sold in the *mercados* (buildings divided into booths to sell different products, including live animals). Cuys nevertheless play an important role in local economies. Cuy meat reaches *asaderos* (businesses that specialize in serving roasted cuys, rabbit, and chicken), modern and traditional restaurants, clubs, and family kitchens via three avenues: open fairs, supermarkets, and direct transactions between producers and consumers. Every town and city allows vendors from nearby farms to sell their products at the open fair. Municipal authorities have areas or streets reserved for this purpose (something like farmers' markets in the United States). In some cases, streets and plazas of almost entire towns or villages are taken over by these merchants, farmers, peddlers, and food vendors. These open fairs not only enliven remote populations but also support local businesses dominated by mestizos and whites, who take advantage of the occasion to sell their manufactured products at inflated prices.

The most authentic open fairs occur in the southern part of Ecuador. In places like Guamote and Quero, exchange between the urban and rural populations gives these fairs a sense of intimacy. Women from communities as far away as two or three hours on foot come to the fair on mules and donkeys or walk barefoot carrying sacks of potatoes, vegetables, and cuys on their backs and their babies tied on front. Meanwhile, well-to-do peasants transport their sheep, cows, and pigs on trucks. By eight in the morning, the *campo ferial* (the section of a community where live animals are sold) is already crowded with buyers and sellers. In other places like Riobamba, Otavalo, Pujilí, and Saquisilí, fairs function as staged tourist attractions rather than as genuine activities of cultural exchange.

In the section reserved for selling small animals, many peasants (most of them women) hold jute sacks or reed baskets in one hand and a cuy in the other (see illustration 3). Buyers from nearby urban areas bring with them an empty sack and hundreds of thousands of *suces* to buy cuys according to their needs. The buyer approaches the seller, asking him or her the price for the cuy being held. Prices range anywhere from a dollar for a small criollo cuy to as much as \$4.00 (U.S.) for a big *cuy mejorado* (one raised according to scientific methods). Urban buyers offer prices as low as fifty cents for criollo cuys and not much higher than \$2.65 for mejorados. Buyers retain the upper hand because peasants need cash to buy various things including salt, sugar, noodles, wax candles, basic medicines, clothes, plastic shoes, and boots. In the end, a three-month-old criollo cuy usually sells for about a dollar and a mejorado for about \$3.00. Some buyers sell the cuys they buy in the *campo ferial* at a different location in town, generally making about a 25 percent profit on

each one. Other buyers sell the cuys in other urban open fairs or to asaderos.

In Ecuador, Bolivia, and Peru, class- and ethnicity-conscious urban mestizos and whites try to avoid direct contact with the rustic and illiterate peasants. Andeans who do not raise their own cuys in urban settings send their servants to buy them at rural fairs, or they buy ready-to-cook cuy meat from others who cater to this market. In Ecuador, middle-class and upper-middle-class people who buy their food at supermarkets can buy eviscerated cuy meat at the two best-known chain stores, Supermaxi and Comisariato Popular. The average price for cuy meat at the Supermaxis located in residential areas of Quito and Cuenca is \$4.00 for .70 kilograms (1.5 pounds). Although prices are competitive, the amount of cuy meat sold at Supermaxi is limited. Each store sells only about fifteen to twenty cuys per day and does not stock them every day. Restaurants and asaderos buy cuys at open-air markets or directly from commercial or industrial farmers, who supply established customers regularly. About 70 percent of Auquicuy's product is sold live on the farm, and the remaining 30 percent is slaughtered to fill orders from small restaurants around Quito. Seven restaurants (three in Carchi and four in Imbabura) buy their year-round supply of cuy meat from Auquicuy. At this farm, cuy meat sells for an average of \$4.40 per kilo (or \$2.20 per pound), and live cuys go for about \$3.50 per kilo (\$1.75 per pound). Auquicuy is so well known that some customers travel for six hours from as far away as southern Colombia to buy cuys from this farm.⁴

Conclusion

The cuy's adaptability to virtually any altitude is advantageous to raising it commercially, especially where conditions for producing forage are favorable. It is therefore possible that prepackaged cuy meat could become available at supermarkets in industrial societies. If such an economic breakthrough were to happen, cuy meat would probably enter the new markets by being served at ethnic restaurants in large urban areas where thousands of Andeans live. In fact, restaurants opened by Andean immigrants in New York City already serve roasted cuys at a cost of about \$25.00 per serving. Once introduced into national economies, low-fat and high-protein cuy meat could be accepted by the increasing number of customers in industrial societies who are becoming more conscious of their diet due to their sedentary habits.

But as economic significance of the industrial use of cuys grows, the current humane attitude toward the guinea pig in industrial societies

4. According to 1992 Auquicuy data, the farm's monthly production costs for raising 2,000 cuy totaled \$3,970. Sales of 1,896 kilos of meat for \$4,896 and the sale of manure for \$266 netted a monthly profit of \$1,192.

as a pet who is almost a member of the family will change as well. Cuys could become just another type of food that goes through the many phases of production, distribution, preparation, and consumption. Cuys could also become yet another product indigenous to the Andes to be industrially controlled and exploited by groups whose economic undertakings are either connected to subsidiaries of multinational monopolies or dependent on foreign investors.

Four economic advantages of cuy raising could induce changes in local economies, attitudes, and perhaps Andean peasants' position in the modern world. First, production costs total only 28 percent of the selling price when production relies on forage available in the environment as well as on concentrate feed (Koeslag 1989, 22). Use of concentrate feed should be discouraged, however, because it affects the taste of the meat. Second, a three-month-old cuy weighing about .8 kilos (1.75 pounds) sold in Ecuador in 1993 for twice as much as sirloin beef (\$2.10 per kilo or \$4.60 per pound) and 46 percent more than chicken (\$1.83 per kilo or \$4.00 per pound). Even if increase in supply drives prices lower, producers will still earn considerable income. Third, unlike other farm products such as wheat, potatoes, coffee, and fruits that are produced worldwide, cuy meat has no competing markets, at least not at national levels. Fourth, pigs and chickens raised widely in the Andes for food or cash depend on consumption of barley, maize, wheat, potatoes, and even fruit and water, and they therefore compete with human beings for these commodities. Cuys do not compete with humans for their food.

The production of cuys for routine consumption or commercial purposes in the Andean subregion is not a new activity, but it requires application of more effective methods than those employed in traditional cuy raising. The flexibility of Andean culture in absorbing foreign cultural elements should be exploited to try to integrate rural and native populations that are isolated from one another. Modern and rational production of cuys at the family or community level is a plausible strategy to include in integrative economic development. That is, cuy raising should be tied to an integral approach to make Andeans active participants in using the cuys that result from biotechnological and genetic research. Further, because new types of cuys developed by methods and technologies are derived from indigenous culture and knowledge, policymakers and the scientific community should explore and support the exploitation of cuys to benefit Andeans first and foremost.

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