Feeding the Poor: Improving Household Production of Guinea Pigs in Peru

by Katherine Morrow

In Peru, raising guinea pigs is usually the responsibility of women and children

(Photo: R. Charbonneau, IDRC)
The Agricultural Research Station of the Agrarian University of La Molina — located on the outskirts of Lima, Peru — is a tranquil haven in the midst of the clogged highways, pollution, and overcrowding characteristic of this megacity of 7 million inhabitants. Here, chickens scratch in dirt laneways among serene fields of ripening corn, which contrast with the chaotic vista of Lima's rapidly growing pueblos jóvenes or 'young towns' — a vast slum that stretches for miles into the parched desert hills and along the Pacific coast to the north and south.

For millions of destitute peasants from the highlands of the Andes, this slum is now home. Many of them were caught in the crossfire during the years of violent conflict between guerrillas, drug traffickers, and the army. As a result, they have abandoned their traditional way of life to become taxi drivers, maids, street vendors, and huachiman or night guards in the city.

The harsh reality of the Andean peoples of Peru, whether migrants to coastal urban centres or rural peasants who practice subsistence agriculture in the highlands, is never far from the minds of Lilia Chauca and her small team of researchers at La Molina. For the past 25 years, these scientists have strived to improve the nutrition and economic security of the poor by focussing on an important staple of the Andean diet: the guinea pig.

**Role of guinea pigs**

"It's very important for people outside Peru to understand the importance of the guinea pig in Andean society," states Dr Chauca. "The fact that they are kept as pets in [the North] causes a great misconception. The guinea pig is an Andean animal: it has been raised for food here for thousands of years. It's an important source of protein for poor families, who otherwise eat little or no meat, mostly potatoes and rice." In the Andes, she says, guinea pigs are raised by women and children in the kitchen, where they are fed vegetable scraps and fresh greens such as alfalfa.

In the breeding centre at La Molina, 6,000 guinea pigs raise a quiet chorus of "kwee kwee," a sound that inspired the Quechua name for guinea pigs, cuy, used by both the Incas and modern-day Peruvians. "What we're doing here is selecting for two specific traits:" says Dr Chauca's colleague, Rosa Higaonna Oshiro, "animals who produce many offspring, and who reach reproductive age relatively quickly. That way people can produce more cuy in less time."

**Promising breeds**

By 1986, the team had identified the first promising breeds that combined the two desired qualities. With funding from the International Development Research Centre (IDRC), they started introducing the animals into the Cajamarca region, in the northern sierra of Peru. Child malnutrition is widespread in Cajamarca — one of the poorest departments in the country.

"We quickly learned that it was preferable to introduce only males," says Dr Chauca. "When bred with local females, which are specifically adapted to local ecological conditions, they produce offspring that combine the qualities of our 'improved' strains with the resiliency of local guinea pigs."

During this work, the research team developed simple, low-cost improvements to traditional guinea pig husbandry methods and initiated a community-based effort to transfer this knowledge to local women and children. One major innovation involved raising the guinea pigs in pens — with one male for several females — rather than letting them run free on the kitchen floor. This helps protect the animals from disease and prevents inbreeding.

**'Hard currency'**

According to Rosa Higaonna, who spent many years doing rural extension work with women's groups and
school children in Cajamarca, "the cuy signifies more than food for the family. It can be bartered for kerosene, rice, and other essentials. During the years of hyperinflation, in the '80's and 90's, the cuy was like hard currency. Its barter value remained stable. The cuy kept many families from destitution during those difficult years." Raising guinea pigs gave women control over a key component of the household economy, she adds.

Because external funding has ended, the Peruvian government is now pressuring La Molina to become self-financing and much of Dr Higaonna's time is spent raising guinea pigs for sale in Lima. Meanwhile, Dr Chauca's team has shifted its attention to helping recent migrants to the city. The researchers are developing new techniques for raising guinea pigs in crowded slum dwellings.

Dr Chauca views the guinea pig as a key Peruvian component of 'urban agriculture', an activity which is attracting worldwide interest for its potential role in ensuring food security in the South. In this way, even as Peruvian society evolves, the guinea pig will maintain its central place in local culture and the family diet, she stresses.

*Katherine Morrow is a Canadian writer who recently worked in Cajamarca, Peru.*

**Sidebar:**

**Role of the Cuy**

**Resource Person:**

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Octubre 2003
Role of the Cuy

The guinea pig has always held a prominent, sacred place in the Andean world. The Incas based their wartime strategies on the entrails of this animal. Today, shamans and traditional healers use black guinea pigs in an ancient curing ritual that dates back thousands of years. The rite involves a ritual washing, during which the animal is passed over the patient's body to absorb the qualities of the illness. The guinea pig may be offered a variety of herbal medicines — the plants it chooses to eat are prescribed for the sick person. The shaman then kills the guinea pig and examine its entrails to determine the cause of illness and the prognosis, but the entrails also reveal the mental health of the patient and the state of the household and family. Following this ritual, the guinea pig becomes an object of potential danger, having absorbed the patient's illness. The head of the household is instructed to bury it in a secluded place, "so that it will not infect any man, nor any woman, nor any animal that flies or walks the earth." (Manuel Barco, Shaman of Huancabamba)

AGUILA: Promoting Urban Agriculture in Latin America

by Laurent Fontaine

Stooping slightly, Violeta Valenzuela points to the lettuce and other plants that line the floor of the greenhouse. The president of the Cooperative Agricola Solidaridad (CASOL) — a community organization in El Alto, located on the Bolivian Altiplano in La Paz — has good reason to be proud. Growing vegetables at an altitude of 4,100 metres is a remarkable feat, especially in the middle of winter when night-time temperatures drop to -7 C.

CASOL is a founding member of AGUILA, the Latin American urban agriculture research network (Red de Agricultura Urbana Investigaciones Latino Americana). AGUILA was established following a seminar on urban agriculture held in April 1995 in La Paz, which was attended by 44 experts from some 20 Latin American countries.
The AGUILA network began official operations early in 1997. AGUILA includes three regional secretariats: one in the Andes (Colombia, Peru, Bolivia, Ecuador), one in the Southern Cone (Argentina, Chile, Brazil, Paraguay, Uruguay), and one for Central America and the Caribbean. Its goal is to promote policies, technologies, and methods that improve the productivity, accessibility, and sustainability of urban production systems. Julio Prudencio Böhrt, executive secretary of the La Paz-based network, is currently organizing a second seminar, to be held in Cuba under IDRC sponsorship.

Survival strategy

According to Böhrt, with the exponential growth of cities in the Southern hemisphere, many families must count on urban agriculture to survive. "Research and experimentation in this field get very little government support," he says. "However, [urban agriculture] is a vital resource for families in a subsistence economy. If they have access to a small garden or greenhouse, the mother or children can sometimes sell the produce. But most of all, the family can diversify and enrich its daily diet, which is often insufficient."

Thanks to their greenhouses, the CASOL women have quadrupled the production of vegetables that otherwise grow only in summer on the Altiplano. Lettuce, spinach, zucchini, tomatoes, cucumbers, and celery now fortify the family diet. And by watering their plants with potable water drawn from a community tap, rather than contaminated rivers or streams, families are at reduced risk from waterborne diseases, in an area where cholera reappeared in the early 1990's.

Urbanization pressures

Determination to prevent the spread of cholera encouraged the launch of another urban agriculture project involving the Servicios múltiples de tecnologías apropiadas (SEMTA). This NGO grows greenhouse crops and raises guinea pigs in Achocalla, a rural valley 30 kilometres from La Paz with access to good quality water. But it faces considerable urban pressure from La Paz. The price of land has increased six-fold in recent years, and it won't be long before the valley is urbanized.

"If the peasants don't adapt their growing techniques, the city will end up pushing them farther onto the Altiplano," says Ricardo Valverde Jimenez, coordinator of the SEMTA program. "On the other hand, if they manage to make certain changes, they'll have a large customer base for healthy vegetables."

Adobe greenhouses

To help the Achocalla peasants adapt, SEMTA has built adobe greenhouses at its experimental centre and trained 45 families to grow small gardens. "A husband might leave, but a greenhouse stays put," says Antonia Quispe, one of the project participants, who is raising four children on her own. On her plot, a small strip of land between the road and a ravine, lettuce and beets would not grow until she built a 320-square metre greenhouse, which was paid for in a single year from the proceeds of her labour. Quispe has also strung nets to grow roses and hardier plants, and has 60 "cuyes"— guinea pigs used for meat at feast time.

In addition to promoting initiatives such as this, AGUILA plays an important role as a financial and information broker. Since the beginning of this year, it has helped several projects obtain funding from IDRC, including a wastewater purification venture in Bolivia, rabbit husbandry research in Peru, and sludge and waste recycling in the Dominican Republic. "We want to make sure that information is exchanged on small experiments like these, which are being conducted throughout Latin America," says
Laurent Fontaine is a freelance writer based in Montreal.

Sidebar:

**Economic benefits of urban agriculture**

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Peruvians love to eat guinea pigs. In fact, they raise them right in their kitchens. A team of IDRC-supported researchers in Lima has developed new breeds of guinea pig that weigh three times more than some wild breeds and can feed six people. The scientists have also come up with better production techniques to meet the demand for this increasingly popular meat.
A

round the world, lawsuits between neighbours, usually over property lines, are part of everyday rural life. In Peru, the lawyers who take these cases are said to be gorged on “cuyas”—or guinea pigs—which they often receive as payment for their legal services rather than cash.

Usually thought of as a common laboratory animal, the guinea pig is the object of a whole mythology in the Andean sierra. Even as far back as the days of the Inca Empire, this pudgy rodent with its squeaking cry (“cuy, cuy”) had established an important place for itself...at the dinner table.

In the cathedral of the city of Cusco, the “navel” of the Inca Empire, hangs a huge painting of the Last Supper. Surrounded by his 12 apostles, Jesus Christ sits at the table with a well roasted guinea pig in front of him which he is sharing with his guests.

Many Peruvians, whether from the mountains or the coast or just recently arrived in the suburbs of Lima, serve guinea pig as the favourite dish at their fiestas. The larger the portion of the inhabitants of Lima have significant proportion of their animal protein from guinea pigs. More than three-quarters of the inhabitants of Lima have eaten one at some time or another, and more than half the city’s population breeds them at home. Improving the marketing systems rather than cash.

for their own consumption or to exchange them for other food such as rice. These “microlivestock” are still raised in the traditional way, close to the heat of the hearth. It is a family activity, mainly the responsibility of women and children.

In Peru, often as many as several dozen animals are allowed to live under the household stove, though sometimes they are kept in little enclosures built of adobe bricks. They are fed on table scraps such as potato peelings, carrots, and lettuce, as well as on banana leaves, alfalfa, and various grains bought for them at the market.

Guinea pigs are easy to raise and they breed rapidly. They are domesticated and don’t run off, even if they get the chance. Being timid, they hide at the slightest movement made by their owners or visitors.

People believe that guinea pigs love smoke and heat, which is why they set them up in the kitchen. The truth is that these animals have imperfect cooling systems. Biologists agree that they can withstand temperatures close to freezing, but the heat kills them quite easily, sometimes in less than 20 minutes.

Contrary to what one might imagine, guinea pigs are not a minor species in this part of the world. Peru alone has 22 million of them. They are also eaten by the highland people of Bolivia, Colombia, and Ecuador.

Researchers Lilia Chauca and Marco Zaldivar are devotees of guinea pigs. They have spent 15 years studying them at the experimental station at La Molina in the suburbs of Lima and are playing an active role in breed improvement.

It is said that at the time of the Spanish Conquest, guinea pigs grew to be 35 centimetres long. Nowadays, most adults don’t reach even half that length. By careful selection of breeds and controlled crossing, the researchers have managed to “move backwards in time” and produce large guinea pigs.

Four types of guinea pig have been developed and are now being evaluated for their adaptability to varied regions and breeding conditions. The animals were selected for the speed with which they gained weight, but their disposition was also taken into account. Calm, docile animals are preferred over more nervous or stressed ones. These characteristics are important if the guinea pigs are to be raised in the kitchen.

The researchers began their work at La Molina station where they have two breeding enclosures that can hold up to 2600 animals. They developed breeds of guinea pig and evaluated their food consumption and growth rates.

Guinea pigs reach adulthood at about four months of age. At La Molina station, they attain a weight of about 1.1 kilograms at three months and, once fattened up, a single guinea pig can feed as many as six people. By contrast, wild Creole guinea pigs weigh less than half a kilogram at three months.

According to Dr Zaldivar, the demand for guinea pigs is on the rise. He is thinking of developing a nationwide Peruvian...
network for breeding ‘supermales’ and selling them to peasants. ‘To do that we’ll have to develop animals that are perfectly adapted to the ecological conditions in the various regions of the country—animals for the coast and others for the sierra. We have developed breeds and simple techniques for raising them which make it possible to triple meat production without increasing the number of animals. Where producers now get three or four females a year by breeding, it is possible to produce as many as 10 animals.’

These improvements stem from detailed selection and better feeding. The new breeds grow faster and are larger. In addition, their breeding cycle has been shortened. Females reach sexual maturity at between 6 and 8 weeks instead of at 13, males at between 9 and 10 weeks instead of 12. With a little care, such as washing the animals to rid them of parasites, producers benefit from the prolific nature of guinea pigs.

Dr Chauca, who heads the research project, recommends early weaning and the separation of males from females. One enclosure can house the young guinea pigs and remaining adult females. Another enclosure can house the pregnant females, when to wean the young ones, and how and what to feed the animals to rid them of parasites, producers benefit from the prolific nature of guinea pigs. Dr Chauca, who heads the research project, recommends early weaning and the separation of males from females. One enclosure can house the young guinea pigs and remaining adult females. Another enclosure can house the young guinea pigs and remaining adult females. ‘Sometimes there’s a problem getting people to accept the idea of raising guinea pigs in small enclosures,’ explains Dr Chauca. ‘Producers, particularly in the central region of the country, believe that guinea pigs breed better running free. But what happens is that the males fight for the females and the number of abortions is high.’ Uncontrolled breeding also leads to inbreeding which produces offspring with low resistance to a variety of diseases.

One thing the women and children have learned is to identify pregnant females which all too often get thrown into the stew pot by mistake. Pregnant guinea pigs can be distinguished by their slow movements and portly look. ‘This simple aspect of raising guinea pigs greatly modifies a family’s level of meat production,’ says Julio Gamarra, project researcher for the Cajamarca region, a rich agricultural valley in the North of Peru.

Dr Gamarra works in the region with about 15 families that raise guinea pigs. ‘A peasant will often have only males, because invariably he catches pregnant ones,’ he says. The researchers give producers a supermale bred at the station in exchange for another male. That protects the animals from degenerating as the result of inbreeding. ‘The peasants are usually pleased. But if things don’t work out, we promise to hold a barbecue for them!’

Dr Gamarra takes his time. He knows that developing a farm-based production project is full of surprises.

‘Sometimes all the animals we’ve marked get eaten between one visit and the next, which makes it impossible to keep up our research (weighing animals or checking their state of health). Sometimes too, the people are reserved. They don’t like someone coming and telling them what to do. That’s perfectly normal. They have to be won over. Only after that’s been done can the work begin.

‘I visit them every week. The first six months gives me the chance to observe their production methods. Then I spend the next six months trying gently to change how they do things.’

The peasant women and their children then learn the rudiments of the improved production system: how to separate out the pregnant females, when to wean the young ones, and how and what to feed them. The researchers recommend, for example, that the animals be fed two or three times a day rather than once. This speeds up their weight gain.

The women and children also learn the importance of cleaning up the guinea pigs’ droppings and washing the animals to keep them free of parasites. The droppings give off heat which is harmful to the animals and can spread a number of human diseases—salmonellosis, for example.

In the village of Jesus, Julio Gamarra has been working with a ‘cuyeria’, a little restaurant that serves a clientele of guinea pig meat lovers. Thanks to Dr Gamarra, the owner is raising more than 100 of the larger ‘improved’ guinea pigs in his backyard.

Dr Gamarra is also helping out Julia and Herrero Pastor, both carpenters. They keep rabbits in raised hutchs in their barn, while the guinea pigs occupy the floor. Thus, the guinea pigs can pick up any food that falls from the hutchs. It is a simple way to integrate two kinds of animal production without taking up too much space.

These few techniques have provided the peasants of Cajamarca, Junin, Huancayo, Puno, and Lima with a simple way to improve their diet and, in some cases, their income. The only real losers are the guinea pigs whose life expectancy is shrinking inexorably from seven years to only few months. But who among the guests at the fiesta is going to complain about such research results?