

Living with Urban Animal Husbandry and Human Welfare Livestock in Town



Small livestock easily kept at home, like these "cuy" in Lima, Peru

Government services concerned with livestock production for urban populations have given most attention to large-scale enterprises with exotic breeds producing eggs, milk or pork in periurban areas. Small-scale raising of animals by families living inside the cities is usually ignored and often forbidden. Such urban livestock keeping is much more widespread than most city authorities would care to admit. It consists mainly of low-input production of poultry, small ruminants, pigs, rabbits, guinea pigs or of a few milk buffalo or cattle, usually indigenous breeds. With deteriorating economic conditions and rapid urbanisation, small-scale urban farming, including animal husbandry, is being practised by a growing number of families in all income groups in the tropics.

In this article, Ann Waters-Bayer presents a way of classifying the various types of urban livestock systems and outlines the functions of livestock for urban dwellers and for cities as a whole. After she indicates some of the problems caused by these systems under present conditions, she further indicates actions that need to be taken by government services and development agencies to improve animal husbandry and human welfare in cities.

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GROWTH

Research into urban farming started in the past two decades, funded mainly by the Food-Energy Nexus Programme of the United Nations University and the Canadian-based International Development Research Centre. Urban farming is defined as the growing of food and non-food crops and the raising of animals in built-up areas (Mougeot 1993). Research in Africa has revealed a rapid expansion of urban farming. For example, in Dar Es Salaam, 44% of low-

income earners had farms in 1980, but 70% by 1987 (Mougeot 1994a). In Harare, cultivation almost doubled from 1990 to 1994 (ENDA-ZW 1994).

Livestock numbers are growing in many African cities. Small-scale dairy production is increasing, but only small amounts of the milk enter official market channels (Walshe et al. 1991). Throughout Africa, numerous small-scale livestock enterprises are being started up to sell through informal channels and to meet the families' own food needs.

While this informal (and often illegal) livestock keeping inside cities grows, large-scale "modern" production in periurban areas is declining in many countries struggling with Structural Adjustment Programmes, and especially after devaluation in francophone Africa. The costs of imported inputs have soared and the luxury markets served by these enterprises have dwindled. Urban consumers are buying products from livestock reared on low-cost local resources and sold through unofficial chan-

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nels rather than dairy plants or certified butchers. Some quantitative studies made in African cities have revealed that:

- ❖ more than 20,000 households in Bamako keep livestock in town, and thousands more people supply them with inputs or marketing services (Centres 1991);
- ❖ over one third of households surveyed in Harare keep livestock in town, mainly chickens but also rabbits, pigeons, ducks and turkeys (ENDA-ZW 1994);
- ❖ in Dar Es Salaam urban farming is the second largest employer

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after petty trade and labour, and 74% of urban farmers keep livestock (Mougeot 1994b);

- ❖ even in densely populated Cairo, 5% of households keep livestock, especially chickens and pigeons (Khoury-Dagher 1987).

These data are either official statistics or the numbers that owners dared to reveal to researchers. They probably underestimate the number of animals actually kept in town.

Those familiar with Asian cities such as Hong Kong, Singapore or Calcutta will know how widespread is the raising of pigs, poultry and fish there, and will know of the close links between animal keepers and restaurants for feed supply and produce marketing. Likewise, those who have been in poor quarters of Latin American cities such as Lima, La Paz or Mexico City will have seen pigs, poultry and guinea pigs being raised in backyards and on rooftops.

CLASSIFICATION

However, it is often difficult for people working in government services to recognise these activities, as most small-scale livestock keepers make little or no use of formal livestock services. Government services are demanded mainly by the periurban enterprises: large to medium-sized government, parastatal or private farms specialised in poultry, meat or dairy production. Relatively little is known about the small enterprises inside the cities and between city quarters. These intra- and inter-urban livestock keepers can be roughly divided into:

- ❖ "on-plot" livestock keepers who use private residential space in backyards, inside the home, on balconies or rooftops; and
- ❖ "off-plot" livestock keepers who use unoccupied private or state land such as open plots, wetlands unsuitable for con-

struction and banks of streams and rivers, along transport and utility lines, on school or hospital grounds, and in public parks.

On-plot. Livestock kept on-plot are often enclosed by a fence, walls or cage or are tethered, and their feed and water are brought to them. Larger animals may be allowed to graze part of the day or seasonally. Besides homeowners, also employees living on hospital and school compounds keep animals. For example, 81% of people living on the university campus in Zaria, Nigeria, keep livestock, mainly poultry and small ruminants (Gefu 1992). A particularly widespread system of on-plot livestock keeping is practised in West and North African cities, where stallkept or tethered sheep are fattened for Muslim festivals. These labour-intensive production systems use high quantities of purchased feed, but are profitable on account of the extremely high prices for fattened rams.

Off-plot. Livestock kept off-plot tend to be grazing animals, such as sheep, goats, pigs, cattle, buffalo and donkeys. They are herded, tethered or allowed to roam freely on land used by agreement or without the landowner's consent. Some of these animals belong to the above-mentioned homeowners, but most belong to landless families: either long-term squatters in densely-populated slums, or pastoralists who settle temporarily on vacant land. For example, in towns of northern and central Nigeria, milk is produced by settled Fulani with small herds or by Fulani who keep only their milk cows in town. The cows are grazed on unoccupied land in and near town, and are fed some purchased agro-processing by-products and crop residues. The women process the milk and sell it directly to consumers. The manure is sold as fertiliser to nearby farmers. When only the milk cows are kept in town, the rest of the herd is taken by the men to grazing pastures further from town, where a second temporary camp is set up (own observations).

What can be observed in this case is true for almost all small-scale livestock enterprises in the informal sector in Africa, Asia and Latin America: they are the result of private initiative, without support from development agents, indeed often despite opposition from the authorities. Thus far, I have classified urban livestock systems primarily according to location: periurban vs. inner city, on-plot vs. off-plot. There are various other possibilities

of classification, such as according to:

- ❖ main production aim: commercial, semi-commercial, subsistence;
- ❖ scale of production: large, medium, small, micro;
- ❖ intensity of production: high, medium or low level of external inputs
- ❖ husbandry methods: free-roaming, herding, tethering, stall-feeding or a combination;
- ❖ land tenure: private, usufruct rent or lease, informal agreement, unsanctioned.

In any given setting, the most useful classification will depend on the historical development, the settlement patterns and the major resource constraints.

FUNCTIONS

Urban livestock systems could also be classified according to the overall income level of the households, i.e. not only the income from animals. The above-mentioned studies have revealed that small-scale farming, including livestock keeping, is practised by urban households in all income groups. However, some types of livestock keeping are more widely practised by the relatively rich, and others by the relatively poor. This is important to distinguish if development is to be aimed at alleviating poverty, as the functions of keeping livestock and the possible strategies for improvement will differ.

For the rich. Periurban "modern" poultry, pig and dairy units are owned by the relatively rich and cater to a luxury market: expatriates, supermarkets and restaurants. Likewise, individuals raising large ruminants in urban compounds are middle- and upper-income earners (Centres 1991, Egziabher 1994, ENDA-ZW 1994, Lee-Smith & Memon 1994a, Mbiba 1993,

Authorities must recognise the existence of livestock in town

Sawio 1994). Two-thirds of all animals kept in Dar Es Salaam are found in the large gardens in formerly colonial, now elitist African residential areas (Mougeot 1994b).

Particularly businessmen and civil servants have diversified into livestock keeping. They depend wholly or partly on hired labour. The animals are fed mainly with purchased roughage and concentrates: crop residues and byproducts such

as brewery waste. These are the private producers who take advantage of extension and veterinary services. Their social links also give them access to exotic breeds either imported or from large state farms (Achuonjei & Debrah 1992; Centres 1991, 1992; Nell 1992).

On-plot livestock keeping has long been practised in cities with a tradition of urban farming. For example, Hausa families in northern Nigerian cities keep cattle in the inner courtyards of their homes. The animals are fed with grass and crop residues, either purchased or fetched by workers. The milk is consumed mainly by the extended family. The manure is packed in sacks and transported by donkey to the family farm plots. This was described already by the German travellers Barth and Staudinger in the 19th century, and has become even more widespread (Fricke 1979).

In some cases, the better-off keep livestock as a source of highly-valued food and supplementary income; in other cases, they do it more as a hobby than a business. Livestock play a social role for family and religious ceremonies. People employed in the formal sector also keep animals to reduce food expenditures as the gap widens between their real wages and the cost of living in the city (Maxwell & Zziwa 1992, Mlozi et al. 1992).

For the poor. Off-plot livestock-keeping, such as roadside grazing, appears to be mainly an activity of lower-income and landless groups. On-plot livestock keeping by the poor is largely restricted to micro-livestock such as poultry, rabbits and guinea pigs, and a few small ruminants. Here it should be noted that the majority of low-income urban farmers, many of whom keep some smallstock, are women (- ENDA-ZW 1994, Lee-Smith & Memon 1994, Maxwell & Zziwa 1992, Sawio 1994). These producers have little access to veterinary care and can afford only very limited amounts of purchased feeds. Very poor urban dwellers rake up garbage to find food for their small stock, or spread out garbage piled on city streets to let their goats select from it.

Then there is the group of poor households, especially recent migrants to squatter quarters, who would like to keep livestock, but cannot because they do not have enough money, space, security and knowledge of local possibilities to start.



For the urban poor, the main functions of livestock are:

- ❖ to provide animal protein for the family, which it could not afford to buy;
- ❖ to generate some income through sales of animals, milk and manure and provision of transport services;
- ❖ to save capital in a form that provides higher interest rates (offspring) than money in the bank and can be used to cover unexpected expenses;
- ❖ to serve as a buffer against high rates of inflation;
- ❖ to provide part-time employment for family members, especially those without formal training;
- ❖ to make productive use of "free" resources such as kitchen wastewater, food processing residues and wastes in city streets;
- ❖ in the case of donkeys, to provide transport for water, feed, food, trading goods etc.

For low-income as compared with high-income urban families, livestock keeping plays a far more important role as a source of food, income and security.

Urban livestock keeping provides a source of employment not only for the animal keepers themselves but also for people operating in the informal supply systems: herders, sellers of leaves and grasses, and collectors and sellers of produce (Centres 1991). Poorer women go house-to-house to buy cereal bran to resell to livestock keepers in town. On urban markets and roadsides, bundles of cut grass or lopped browse, groundnut hay and other crop residues are offered for sale, not only by farmers but also by poor urban dwellers who make daily forays beyond the city to

collect feed for urban stock. Some people without animals even grow forage for sale, such as the Napier grass grown around Nairobi to sell to urban livestock keepers (Lado 1990).

OPPORTUNITIES

Livestock keeping also offers opportunities at the city level. The few studies made thus far suggest that public benefits derived from urban livestock keeping include:

- ❖ more efficient land use, i.e., bringing a return from land that is unsuitable for construction or still undeveloped;
- ❖ providing employment, also upstream and downstream from the production itself;
- ❖ reducing transport and energy costs (- and associated pollution) for input supply and produce marketing;
- ❖ reducing public costs for land maintenance or municipal services, e.g. for garbage collection and for cutting vegetation along roads and utility lines (electricity, telephone) and on other public land;
- ❖ improving the supply of perishable but nutritious foods such as milk and eggs to urban consumers, especially poorer ones who lack refrigeration facilities;
- ❖ providing lower-cost food for urban dwellers than food imported from rural areas or abroad, as direct producer-consumer sales are possible, and there is little or no need for processing, packaging and storage.

One of the greatest strengths of small-scale urban livestock keeping is its great mobility and flexibility. It gives value to municipal and private land momentarily not being used for other purposes, making opportunistic use of land in a positive sense.

A key opportunity offered by urban livestock keeping, is waste recycling. One of the biggest problems in cities - garbage - can be a resource for animals: organic wastes from households, streets, market-places and agro-industries can provide valuable feed. The value of recycled wastes for livestock has long been recognised in

More research is needed

Asian cities but also in Latin American cities such as Mexico City (Suarez & Barkin 1990) and Montevideo, where a lucrative source of income for smallholders is backyard pig keeping based on household scraps and restaurant wastes. In Montevideo, people with horse carts collect useful garbage for pigs before the garbage trucks arrive (Serd & Neldbardt 1993).

Also urban wastewater can be a resource for urban animals and crops. For example, Mexico City pumps over half its sewage to irrigated alfalfa fields. The feed is trucked to the city centre and sold in shops to backyard livestock producers who, in turn, sell the manure to urban growers of vegetables and flowers (Smit & Nasr 1992). Also the City Council of Harare uses recycled water to irrigate pastures for grazing herds, and sells the meat to urban market outlets (Mougeot 1994b). Some herders in Zimbabwe are also taking wastewater management into their own hands: they are blocking sewer mains passing through low-lying land between town sections, so as to flood the area and provide green pasture for their cattle (Mbiba 1994). Another use of wastewater is aquaculture, a fast-growing form of urban livestock keeping. Fish can be raised in wastewater purified less completely than needed for direct human consumption. The water can be purified by biological means such as duckweed, which can also be used as high-protein feed for fish and other animals (Smit & Nasr 1992).

Just as livestock can turn urban wastes into resources, also the wastes from livestock keeping can become a valuable input for urban growing of staple foods, vegetables and fruits. Indeed, it is reported from Indonesia that animal manure mixed with rejected feed and sold as fertiliser makes up a large part of cash generated from stall-kept ruminants (Orskov 1994). The rapid recycling of animal wastes helps

reduce the health risks caused by livestock in town. Systems need to be developed to deliver manure and wastes from animal processing to nearby gardens and farms, including fishponds. In Bamako, some market gardeners have already found a solution: during the school year, the children of livestock keepers carry manure to school, where it is bought by the gardeners, who also fetch slaughterhouse wastes to fertilise their plots (Centres 1991).

The efficient recycling of sewage and organic wastes for and from animals will be one of the major tasks for research and extension services for urban livestock systems. Appropriate forms of local organisation are needed to strengthen the links between livestock, cropping, food processing and waste collection within different city quarters. Household separation of garbage and decentralised collection of the organic wastes for urban livestock and crops should be encouraged. There are already promising examples, particularly in large Asian cities such as Hong Kong, of how such local recycling of nutrients can make cities more self-sustainable in terms of food security (Newcombe 1977).

PROBLEMS

However, living with livestock in town also gives rise to problems. As veterinarians well know, the proximity of animals to humans increases the risk of transmitting diseases. Manure, dirty bedding material, feed rests and the wastes of animal processing, if not properly handled, can attract flies and lead to water pollution. With more direct sales through informal channels, control of hygiene conditions and food quality becomes impossible, in view of the lack of laboratories and qualified staff in most developing countries. Traffic accidents may be caused by roaming animals. Neighbours often complain about the noise and odours from livestock in town.

Banning animals and sales of non-controlled products is not the answer, as this would deprive many urban families of a vital source of livelihood. Besides, in many cities, the bans are already in the books, but cannot be imposed. Most importantly, bans prevent the state from intervening to improve animal health and productivity and to minimise risks to human health. The reality of today is that millions of people in cities are living with livestock, either their own or that of their neighbours.

They have good reasons for keeping animals and they face considerable problems in doing so. They, their neighbours and their customers could benefit greatly from support in dealing with these problems.

The few studies made thus far suggest that a major problem experienced by urban livestock keepers is high animal mortality. For example, the value of animals that died annually was found to be higher than the value of animals consumed or sold by urban cattle keepers in Nairobi (Lee-Smith & Memon 1994). It will be a challenge for livestock services to find economic ways to reduce mortality. Most small-scale livestock keepers cannot afford large cash expenditures. The solutions are more likely to be found in the realms of cost-effective prophylaxis, rather than curative measures, and education in hygiene, rather than unenforceable regulations. The problems are by no means limited to those of animal health and hygiene.



Waste recycling using animals in India

Studies of urban livestock keeping in Mali and Burkina Faso (Centres 1991, 1992) reveal that the biggest problem of small-scale producers, particularly those in inner cities where there is little room for animal grazing - is feed supply. Another problem is lack of space to keep the animals. Small ruminants and poultry are kept in the entrance, the kitchen or a room of the house when it rains and otherwise wander the street. Addressing these problems of animal feeding and housing will also help in improving animal welfare and reducing losses.

ACTION

Many planners regard urban livestock keeping as a transitory phenomenon in these countries. However, there is no indication that livestock and other forms of farming decrease, the longer people live in cities. Indeed, quite the contrary appears to be the case.

In the past, government support was given mainly to large-scale intensive meat, milk and egg production units. Government incentives included tax exemption, low-interest credit and subsidies on inputs and/or outputs (Krostitz 1984). Recent economic changes have put an end to many of these ventures, particularly in Africa. A study of the effect of structural adjustment in Nigeria revealed that small-scale food producers are reacting more flexibly and productively than the large-scale units, and further financial support for the latter is strongly questioned (Porter 1994).

Micro-entrepreneurs have developed inner-city livestock keeping through processes of indigenous innovation, without external support. Development agents and government officials are only beginning to recognise what is happening under their very noses. The questions are now: what can and should be the role of government and development agencies in the face of these local initiatives? How can urban livestock keeping be assisted to alleviate poverty and improve human welfare in cities?

First of all, authorities must recognise the existence of livestock in town. Official recognition makes it easier for veterinary and extension services to deal with the dangers of livestock to human health and environmental quality, and to maximise the opportunities.

Little research has been done on urban livestock, not only because the animals are not supposed to be there, but also because they are mobile, use land only temporarily and, especially in the case of micro-livestock and backyard animals, are not readily visible. More research is needed into livestock-keeping systems and their constraints, taking into account the concerns and values of the producers themselves, their neighbours and city authorities. The results of such studies need to be made widely known among political decision-makers in clear, concise language.

Information also needs to be spread to producers and consumers about livestock-

related dangers for human health and how to avoid or reduce them.

Development agents should work together with low-income city dwellers to develop appropriate technologies for keeping animals in small spaces and organisational forms to allow access to inputs needed for healthy and productive forms of animal husbandry. A relatively simple start would be to make inputs such as veterinary products and feed supplements available in small units suitable for backyard farming. Assistance could also be given in offering marketing facilities such as "urban farmer markets" which allow direct producer-consumer contacts under hygienic conditions, e.g. with access to clean water. This is particularly important for women selling dairy products and other home-processed foods.

Development agencies should be creating opportunities for livestock keepers and other city dwellers to communicate with each other, understand each other's actions and encourage changes in behaviour. One possibility would be to promote producer organisations: common-interest groups which can negotiate with other local stakeholders in jointly defining and implementing regulations for using urban resources such as grazing areas or garbage. Particularly urban crop farmers and livestock keepers need to be brought together to work out forms of interaction which allow mutual benefits. Legal arrangements for temporary or multiple use of urban resources must be facilitated in a way that the great strength of urban livestock keeping - its flexibility - is maintained.

Cities can be made greener and healthier and degraded land can be ameliorated if livestock keepers are given the chance to benefit from environmental improvements, e.g. by granting them rights to grow and trim trees lining roads, or to plant and cut grass on unbuilt slopes or public land, in order to obtain animal feed.

Governments need to set up policy and services which favour small-scale livestock production based on local inputs: encouraging the use of local non-conventional feeds and focusing on animal species and breeds (e.g. local cattle, buffalo, goats, rabbits) which can use the available roughages and depend less on concentrates. Combined efforts of farmers and animal nutritionists will be needed to identify locally-available resources and to design

feed mixtures to meet the needs of different animal species.

As a rule, it can be said that the smaller the livestock, the more affordable it is to a wide range of income groups and the more easily it can make use of limited urban spaces (Mougeot 1994b). This suggests that activities focused on smallstock such as poultry, guinea pigs, rabbits, goats and sheep are more likely to benefit also the urban poor in crowded inner cities. Most of the literature makes no reference to the gender of livestock owners, but it is sometimes mentioned that the work of feeding, watering and marketing smallstock in towns is done mainly by women. This suggests that particular attention needs to be given to the role of women in urban livestock keeping, and that women will be key partners in official development efforts.

In summary, the challenge for veterinary services confronted with the reality of livestock in cities is to interact in a positive, enabling manner with urban dwellers, rather than making vain attempts at control. What is needed from government services is well-founded and locally applicable information and appropriate low-cost inputs for healthy and productive livestock in town. All stakeholders will then be in a better position to make wise decisions when jointly planning the use of urban resources for livestock keeping and other sources of livelihood for urban dwellers.

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