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Surveys on small-scale urban and peri-urban livestock production in Long Xuyen City

Ngo Thuy Bao Tran, R. Brian Ogle *

Department of Animal Husbandry and Veterinary, Agriculture and Natural Resources Faculty, Angiang University, 25 Vo Thi Sau, Long Xuyen City, Vietnam.
** Department of Animal Nutrition and Management, Swedish University of Agricultural Sciences P.O.Box 7024, S-750 07 Uppsala, Sweden.*

Abstract

A survey on small-scale livestock production in urban areas of Long Xuyen city was carried out in four wards and one commune: My Xuyen, My Phuoc, Binh Duc, My Thoi wards and My Hoa Hung commune. In total information was collected from 150 households on the social characteristics of the households, such as family composition, education level, available manpower, household activities etc. Detailed information was also collected on livestock production in the household: income from livestock, capital, management techniques, reasons for keeping livestock, numbers of different species kept, rearing systems, animal housing, feed ingredients and feeding systems, breeds kept, veterinary inputs and selling and marketing of animal products. Data was also collected on constraints in keeping livestock and the effects of flooding and avian influenza on livestock production in the area.

The results of this survey showed that most of the livestock owners were women (70%), aged between 31-50 (58.7%) and their level of education was elementary school only (46%). They kept animals mainly for income, and because 24.7% were unemployed and as 48.7 % worked with rice production they periodically had free time and wanted to utilize available resources in their household (labour and feed) to increase incomes. Pigs were the main species kept in Long Xuyen City, with 82% of households with livestock keeping pigs, followed by chickens, ducks, buffalo, cattle and goats.

Because their livestock were kept in urban areas, most producers paid attention to the local environment, and most households had a cesspool and used the manure from their animals (84% and 33.3%, respectively). Only 4% reported conflicts with their neighbours about the environment (e.g. odours, noise). The main problem reported was animal feed (80% of households), of which feed costs were considered to be too high, followed by lack of investment capital (64.7% of households) and marketing problems (38.6%). The annual flooding was not considered to be a serious problem by most, although 14.6% said that they had problems with their animal

houses in the flooding season. Although avian influenza was known to seriously affect poultry and human health, 57.3% did not consider it to be a serious problem, and only a minority said it was "very dangerous" (10%) or dangerous (29.3%). The majority (63.3%) said that they intended to continue keeping poultry.
Key words: small-scale, urban livestock, Long Xuyen city, reasons, income, capital, management techniques, species, housing, feed, breed, veterinary, market and selling.

1. Introduction

Long Xuyen is the trade center and the socio-economic, political and cultural capital of An Giang province, and is a dynamic centre with a high growth potential. Its location is convenient for both waterway and overland transportation and the city is now the major entrepot for economic exchange between An Giang province and other surrounding localities in the Mekong delta. Over the past few years local economic development has contributed to a considerable job generation, and income improvement, and hence an ever-increasing demand and consumption of livestock products.

The survey was aimed at determining the extent and importance of livestock production in urban areas in Long Xuyen City, and to predict potential changes and their possible effects on the local environment.

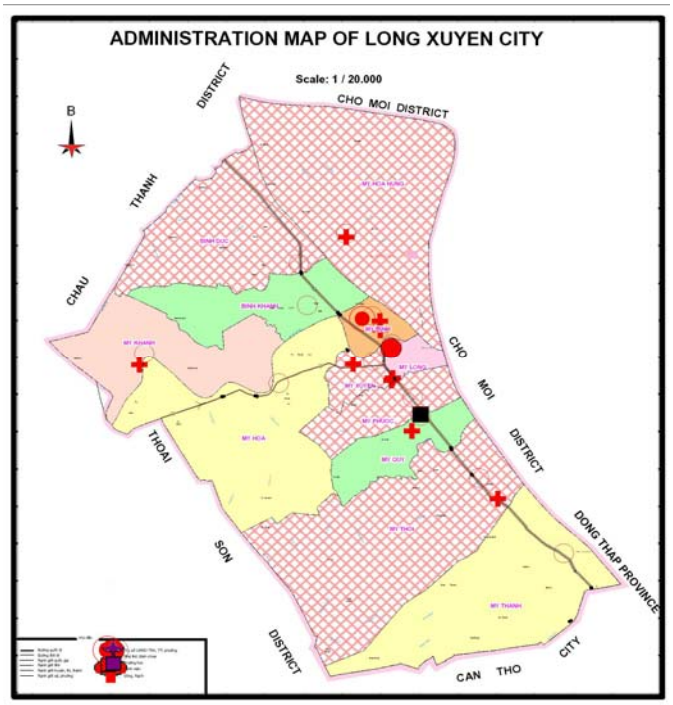

Figure 2.1. Administration Map of Long Xuyen City

2. Background of Long Xuyen city

Long Xuyen City has an area of 106.87 km^2 and is located in the southern part of Angiang province. It is divided into 9 wards (My Binh, My Long, My Xuyen, Binh Duc, Binh Khanh, My Phuoc, My Quy, My Thoi and My Thanh) and 3 communes (My Hoa Hung, My Khanh and My Hoa) (Figure 2.1) with a total number of residents of 263,838. The population density is 2,469 head / km^2 (Long Xuyen statistic Yearbook, 2003). In addition to natural increases, the population of the city increases every year by influxes of people who come to work in companies, and especially the students in the vocational education and job training programmes run by, for example, Angiang University, Center of Continuing Education (My Xuyen ward) and a number of other institutions: The Job Training school, Economic and Technology school (Binh Khanh ward) and Medicine school (Angiang People Committee, 2003). Of these, Angiang University is considered to be the main education center for the new workforce of the province and the Mekong River Delta in the common task of industrialization and modernization.

Although the socio-economic, political and cultural capital of the province, the economic activity of Long Xuyen city is mainly based on trade and services (66.2% of total economic activity) followed by industry and construction (26.4%) and finally agriculture, with many companies and factories producing, processing and exporting agricultural products (Angiang People's Committee, 2003), such as:

- Antesco (Angiang Agricultural Technology Service Company) that produces, processes and exports frozen vegetables such as baby corn, pineapples, green soybeans, okras, straw mushrooms, chili, etc. and different tropical fruits, such as mangoes, papayas, green-dragon, and jackfruits etc…
- An Thai Food Company, of which the main products are instant foods such as noodles, rice noodles, rice vermicelli, mung threads, cooking rice, porridge, soups etc….
- Navifishco (Nam Viet Company limited) is specialized in the processing, trade and export of aqua-products from catfish (basa, tra) and shrimps.
- AFIEX (Angiang Agriculture and Food Import Export Company) which specializes in producing, processing, trading, importing and exporting goods, both agriculture and non-agriculture products, and produces feed for domestic animals and aquaculture.

The city also has other companies, with factories that produce building materials (bricks, concrete), machined materials, fashion, footgear etc. In addition, the province is planning to develop My Hoa Hung commune - the birthplace of the second president of Vietnam as a tourist area, and also to develop Vam Cong Industrial Zone, and My Thoi Port (in My Thanh ward).

3. Materials and methods

3.1. Selection of sites and respondent households

Four wards and one commune of the twelve wards and communes of Long Xuyen City were selected. In total 150 households were chosen, in My Xuyen, My Phuoc, Binh Duc and My Thoi Wards and My Hoa Hung Commune.

My Xuyen is located in the middle of the city and the population in 2003 was 26,871 people, and population density was 17,795 head/ km^2 which is 7.2 times higher than the overall density. Partly due to the presence of the Provincial Angiang University, the population in this ward is increasing rapidly, and all of the previous agricultural land in this ward is now used for residential purposes.

My Phuoc is adjacent to My Xuyen ward. The population in 2003 was 25,898 people and population density 6,037 head/ km^2. As is the case for My Xuyen ward, it also includes many students who reside in the ward.

Binh Duc is in the Northwest of Long Xuyen City, and includes many industrial companies and is developing towards being an industrial zone.

My Thoi is in the South of Long Xuyen City. This ward is the largest in the city. There is a harbor and the ward includes several industrial companies. This ward is also tending to develop as an industrial zone.

My Hoa Hung is located on an island in a branch of the Mekong River. It is the hometown of the second President of Vietnam. There is considerable potential to develop the commune, especially with respect to agriculture and tourism, such as ecotourism, aquaculture, pig production etc. Currently, My Hoa Hung is called “Pig Island”, because pig production is increasing rapidly.

Table 2.1. Land area and population of Long Xuyen City, 2003

	Area (km^2)	Agricultural land (km^2)	Residential land (km^2)	Population (head)	Population density (head/km^2)
Long Xuyen City	106.87	64.49	19.05	263,838	2,469
My Xuyen	1.51	0.27	0.67	26,871	17,795
My Phuoc	4.29	1.89	0.77	25,898	6,037
Binh Duc	10.81	7.62	1.12	16,936	1,567
My Thoi	20.00	15.23	0.66	21,483	1,074
My Binh	1.31	-	0.44	22,608	17,258
My Long	1.36	-	0.50	24,390	17,934
Binh Khanh	6.55	3.89	1.71	27,290	4,166
My Thanh	13.90	8.56	2.67	26,296	1,892
My Hoa Hung	17.64	7.65	2.39	22,675	1,285
My Khanh	8.86	6.41	1.64	10,372	1,171
My Hoa	16.51	10.96	3.49	27,528	1,667

Source: Long Xuyen Statistic Yearbook, 2003

The total number of households interviewed was 150 (30 households in each ward or commune). Respondent families were selected from the list of the ward leader and based on the number of livestock kept (small-scale, which means with <25 pigs or < 200 chickens or ducks or < 10 cattle) and farms where the producers and their animals stay, as some producers are not allowed to keep livestock near their residence.

3.2. Data collection

Data were collected on:

- Household information, such as manpower, activities and sources of income and capital
- Livestock owners: age, education and gender of main livestock producer; sources of information on new management techniques and experience in livestock production
- Number of livestock kept and reasons for keeping livestock
- Livestock production: animal housing and livestock system; breeds and species; cesspool and use of manure; feeds and feeding systems; veterinary services and vaccination; sale of livestock products and effects of annual floods on livestock production
- Producer problems; support and future plans
- Opinions on location of farm; on avian influenza and it consequences

3.3. Research methods

3.3.1. Collecting general data

General data were collected by two methods: collecting information from local administration authorities and officers and from city and province officers, and using Participatory Rural Appraisal methods (PRA).

3.3.2. Primary data

Primary data were gathered from interviewing 150 livestock producers. The questionnaire is based on the discussions with the ward leader, the characteristics of the environment-economy-society of the sites and technical advisers. Then the questionnaires were checked with 10 households before the actual interviews.

The interviewers included the students of the Department of Rural Development and staff of the Agriculture and Natural Resources Faculty of Angiang University, and local leaders.

4. Results and Discussion

4.1. Characteristics of livestock producers in Long Xuyen City

4.1.1. Household members

Table 2.2. Household (hh) members

	No. of hh	Min	Max	Total	Mean
No of people in hh	150	1	13	756	5.0
Total available workers	150	1	11	517	3.4
Agricultural workers	150	1	8	345	2.3
Female workers	139	0	4	181	1.2
Male workers	122	0	4	164	1.1
Child workers	1	0	1	1	.01

A total of 150 households were studied in Long Xuyen City. The total number of people was 756 capita with a mean of 5.0 /family, of which the total of working age was 517, with a mean of 3.4 /family. The total number of agricultural workers was 345, of which 181 were female (a mean of 1.2 /family) and 164 were male (a mean of 1.1/family). The number of women working in agriculture was thus higher than the number of men, possibly because livestock keeping, especially pigs and poultry is an important source of additional income for women and a high proportion of households with livestock kept poultry and/or pigs. Only one household said that their children helped with taking care of their livestock.

4.1.2. Age and education of person mainly responsible for livestock

As shown in Table 2.2, slightly more than 50% of the total number of workers in agriculture was female. However of those responsible for the livestock, 70% were female, and only 30% were male (Table 2.3, Figure 2.1). The reason for this gender disparity between men and women is probably because women are at a disadvantage compared with men where it concerns finding paid employment outside the home. Women have to do all of the housework, such as cooking, cleaning washing, and taking care of young children and old people. They could only earn regular income from small-scale processing, trade, part-time wage labour, handicrafts, and the production and sale of livestock products such as eggs, meat, milk and live animals. Most of the livestock producers were from 31-50 years old, and especially the women fell into this age range. The proportion between 41-50 (22.7%) and 31-40 (18.6%) was also quite high, while the proportion of men responsible for livestock aged 41-50 (7.3%) and 31-40 (10%) was lower (Figure 2.2)

Table 2.3. Age and education of person mainly responsible for livestock

	Gender					
	Female		Male		Total	
	No. of hh	% No. of hh		%	No. of hh	%
Total	105	70.0	45	30.0	150	100.0
Age						
<30	13	8.7	6	4.0	19	12.7
31-40	28	18.6	15	10.0	43	28.6
41-50	34	22.7	11	7.3	45	30.0
51-60	17	11.3	10	6.7	27	18.0
>60	13	8.7	3	2.0	16	10.7
Education						
No schooling	9	6.0	-	-	9	6.0
Elementary	50	33.3	19	12.7	69	46.0
Secondary	30	20.0	16	10.7	46	30.7
High school	16	10.7	10	6.6	26	17.3

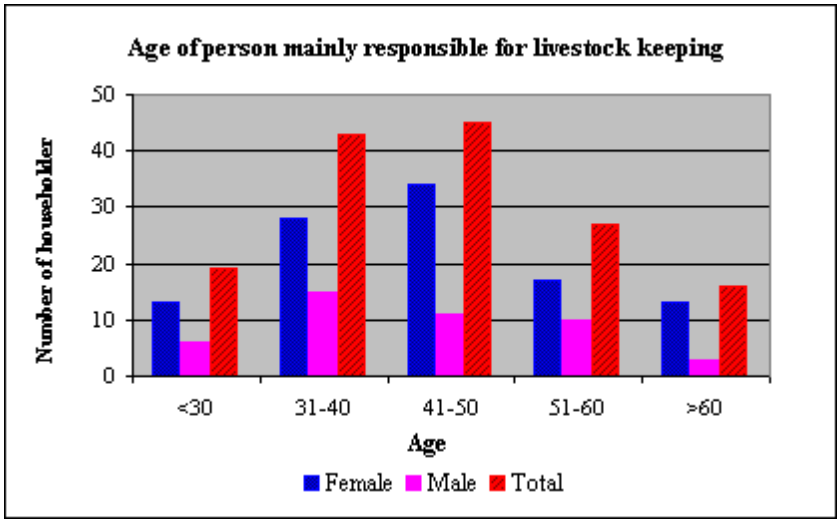

Figure 2.2. Age of person mainly responsible for livestock keeping

Generally, the level of education of the person mainly responsible for the livestock was still low. Around 46% had elementary school education (69), 30.7% secondary school education (46) and only 17.3% high school education (26). Around 6% were illiterate (9), and all of these were women. More than 50% of the women worked in agriculture, but of these only 25% participated in husbandry extension and 10% in crop cultivation. According to one officer interviewed, the benefits from

livestock production were low when the level of education of the person mainly responsible for the livestock was low. People with a low level of education had problems in learning and adopting new technologies and did this only slowly and with difficultly (Anh, V.T, 2004) (Figure 2.3).

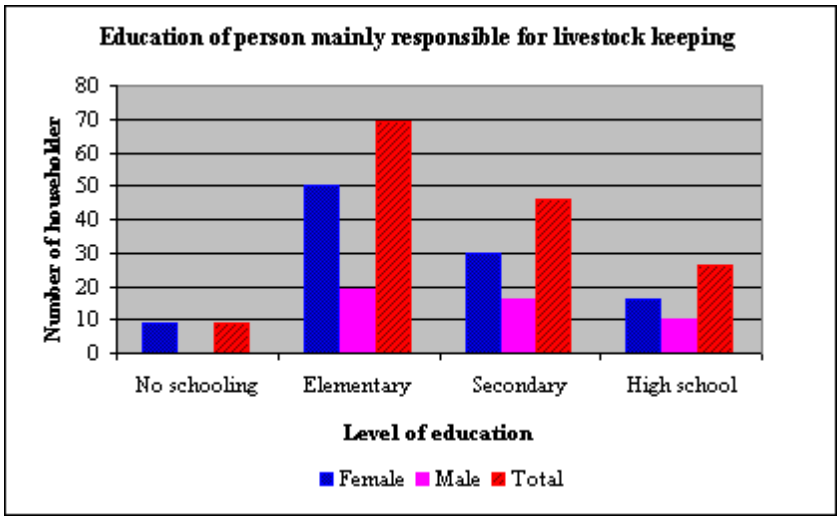

Figure 2.3. Education of person mainly responsible for livestock keeping

(Photo 2.1. Blind woman and her pig in My Thoi ward)

4.1.3. Years of experience of keeping livestock

Table 2.4. Years of experience of livestock keeping

Years of experience	No. of hh	%
=<5 years	64	42.7
6-10 years	37	24.7
11-15 years	25	16.7
16-20 years	8	5.3
21-25 years	7	4.7
>=26 years	9	6.0

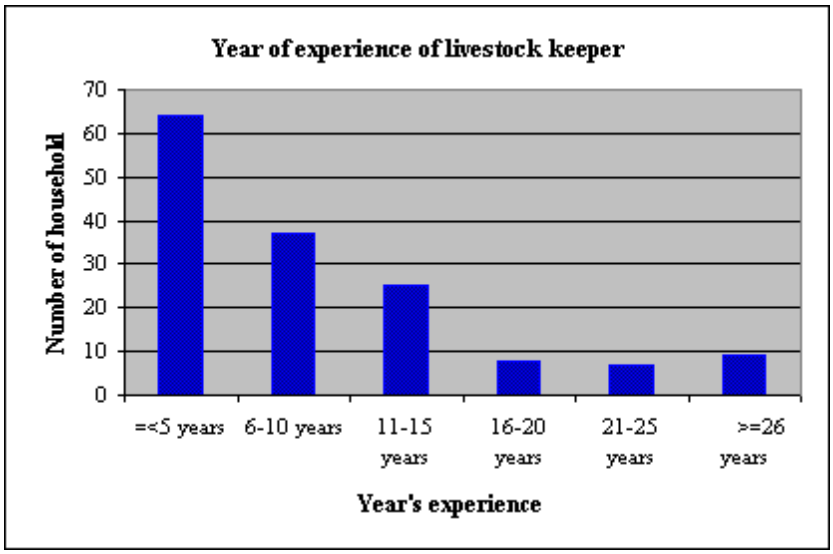

Figure 2.4. Year of experience of keeping livestock

The proportion of producers who started keeping livestock less than 5 years ago (2000-present) was highest (42.7%), followed by those who started from 6-10 years ago (24.7%), 11-15 years ago (16.7%), and finally more than 16 years ago (16%). This means that the proportion of livestock producers with more than 10 years experience is only around one third of the total. Starting livestock production was spontaneous, as most producers had few alternatives for generating income; most were not in secure employment, had very low incomes were unemployed and had free time to devote to livestock. One contributing factor to the growth of urban livestock keeping is that in recent years, urbanization in Long Xuyen City has reduced the available agricultural land, which has been converted to residential, industrial, and commercial usage. As a result a number of crop farmers lost their livelihoods, as they

suddenly had no land to cultivate, and lacked the education and experience to obtain work in industry. Although some producers who started raising livestock more than 10 years ago said that their families were better off because of increased profits from keeping animals, others had found stable jobs and incomes, and did not want to keep livestock any more. Several producers, however, said that in the past they got more benefits from livestock than now. Because of in the past the population density and the pressure on land were lower, livestock production did not cause friction with neighbours and so more livestock could be kept around the residence. At present, producers have to spend more money on resources such as electricity and water and infrastructure in order to reduce the effects on the environment, and often the number of animals they are able to keep is lower than in the past.

4.1.4. Sources of information on new management techniques

Table 2.5. Sources of information on new management technique

Sources of information	No. of hh	%
Own experiments	128	85.3
Other farmers	66	44.0
Mass media	52	34.7
Workshops	38	25.3
Extension services	34	22.7

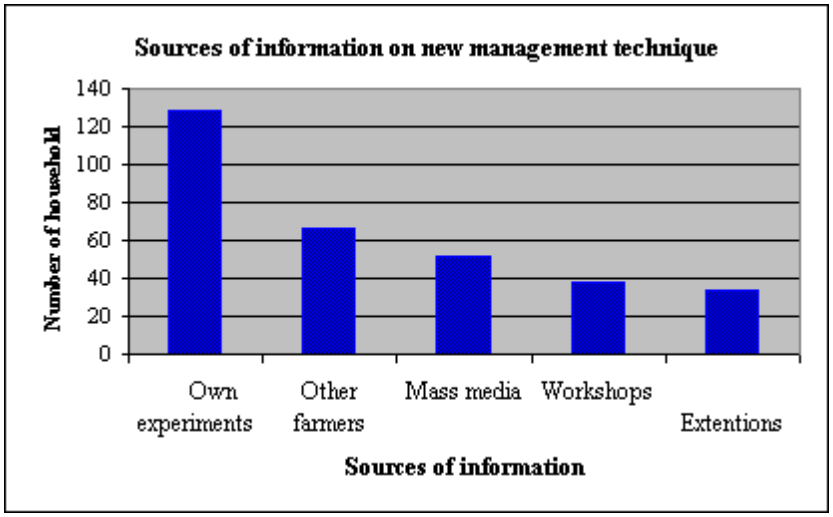

Figure 2.5. Sources of information on new management techniques

Most producers (85.3%) said that they got new techniques from their own experiments: first, they learned and remembered husbandry practices from their parents or neighbours, and also gained experience when they raised animals themselves. They also heard of new techniques by talking and discussing with other farmers (44.0%), and got information from the mass media, such as newspapers, books, magazines, radio and television (34.7%). There are a number of television and radio programs that focus on crop agriculture and animal husbandry, for example: "Agricultural Extension", "Meeting of Four Houses" (The Government - Nha Nuoc, Scientist - Nha Khoa hoc, Trader - Nha Kinh doanh and Farmer - Nha San xuat), Friend of Farmers (Angiang Province), and "Friend of the Livestock Keeper" (Cantho Province). Another 25.3% said that they got information mainly from workshops, most of which are organized by veterinary or animal feed companies in order to promote and sell their products. The province government also organizes workshops for farmers, but these are limited because of a lack of resources and extension workers. Some livestock producers learned about new techniques directly from extension workers (22.7%), but normally these are large-scale commercial producers or are acquainted personally with the extensionist. Animal feed and veterinary agents were the most popular in introducing new techniques, although they always encouraged the producer to purchase their company's products, which they claimed would increase profits.

4.1.5. Household activities in addition to animal production

Table 2.6. Household activities besides animal production

Activity	No. of hh	%
Rice	72	48.0
Other crops	16	10.7
Fishery	21	14.0
Services	27	18.0
Agricultural labourer	39	26.0
Non-agricultural labourer	24	16.0
Trade	27	18.0
Small-scale processing	13	8.7
Employee	30	20.0

Besides animal production, household activities included both agricultural and non-agricultural activities, which varied considerably between households. For example 48% of the farms cultivated rice, 26% worked as agricultural laborers, 20% were in other employment, 18% worked in trade and services, 16% in non-agricultural labour, 14% in fishery, 10% in crop cultivation and 8.7 % in small-scale processing. As was confirmed from the PRA study, most livestock producers said that

the income from livestock production was additional income rather than the main source of income of the household. Most of them said that their income from livestock only accounted for 10-30% of the total income (101 households), from 40-50% ,16 households, 50% of total income from livestock, 12 households, from 60-70%, 11 households, and only 4 households said that 100% of their income came from animal production. On the other hand, 3 households said that their income from livestock production accounted for only 1-5% of total household income and another 3 households did not get any income from these activities. Their main source income was through sale of rice, paid employment, trade, services, and selling their labour. Explanations given for why income from livestock was low included: they keep low numbers because of lack of capital to expand; they utilize their limited free time, and available local breeds, rice, by-products, and waste to generate some income, even though the amounts are low.

4.1.6. Reasons for keeping livestock

Table 2.7. Reasons for keeping livestock

Reason	No. of hh	%
Income	73	48.7
Profitable way of using cheap waste feed	39	26.0
Unemployed	37	24.7
Like rearing animals	1	0.7

Livestock production in the region has been largely traditional; it has primarily provided the most immediate needs of the farming households.

Most livestock producers (48.7%) said that they wanted to get more income from keeping livestock; some (26.0%) mainly wanted to salvage available waste feed to get some profits from livestock; 24.7% said that they were jobless and needed some form of gainful activity to earn money. Only one respondent (0.7%) said that he liked rearing animals, especially chickens.

4.2. Livestock productions in Long Xuyen City

4.2.1. Number of households keeping livestock and species

About four-fifths of producers (82%) kept pigs, 28% kept chickens, 10.7 % kept ducks and 10% kept cattle (Table 2.8 and Figure 2.6). A small number kept buffalo (1.3%) and goats (0.7% of the total number of households interviewed). Of the 42 households that kept chickens only 12 families kept them as the main species, and these were mainly old people who had no alternatives to earn money. A few families wanted to get more income by salvaging available waste or surplus feed, and only one person replied that the reason for keeping chickens was that he liked them.

Only 16 households kept ducks, and of these only 6 families that kept ducks as the main livestock species.

Table 2.8. Number of households keeping livestock, and livestock species kept

Species	All species		Main species		Breeding females		Total	Females
	No. of hh	%	No. of hh	%	No. of hh	%	No.	No.
Pigs	123	82.0	117	78.0	88	58.6	1494	215
Buffalo	2	1.3	1	0.7	-	-	4	-
Cattle	15	10.0	13	8.7	4	2.7	71	10
Goats	1	0.7	1	0.7	1	0.7	8	7
Chickens	42	28.0	12	8.0	41	27.3	659	340
Ducks	16	10.7	6	4.0	16	10.7	1437	1251

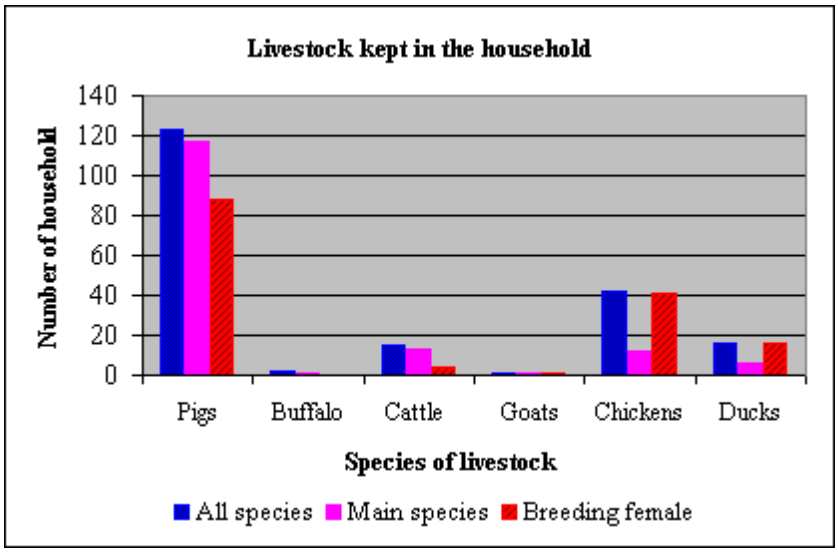

Figure 2.6. Livestock kept in the household

The pig was the most common species kept, even though it is an omnivorous animal and in some respects competes with man for food (FAO, 2001) however it was considered a valuable user of by-products and waste from human food production and processing industries. Other families liked to keep pigs because they could keep a small number in and around their house, and so it was easy to look after them. Although the starting-capital and production costs are higher, producers get higher incomes when selling pigs compared to ducks or chickens. Thus, the pig is well adapted to the family scale of production where the role of women is very important, both in collecting household waste and in looking after the animals.

After the pig, the chickens and ducks were the second most common species kept in the urban and peri-urban households interviewed. Chickens were mainly raised for meat and eggs, and ducks for meat, eggs and feathers. The advantages of poultry production are the low inputs (capital, feed and housing), quick returns and good market opportunities, as demand is always high (*Stanton et al, 1996*). A major purpose of keeping chickens was to supplement household revenues in terms of food and cash. Chickens are kept all year round, but ducks normally are seasonal. Ducks are commonly fattened during the rice harvest period, and so costs of duck feed are low, but they require more labour. At present, 3 rice crops/ year are produced in some areas, so ducks can be kept all year round.

Every family that cultivates rice makes an effort to have two or more cattle or buffaloes available so as to be self-sufficient with respect to draft power. Buffalo have an advantage due to the availability of grazing and rice straw, and through being well adapted to the ecological conditions of the Mekong Delta.

Goat keeping is still new in Long Xuyen City, and although some families wanted to change to goats they were afraid of failure, because they did not know about management techniques and were concerned about the market for goat meat and possible diseases. The goat is also a new species for the veterinarians in the city.

Presently, some pig producers want to switch to cattle or goats instead of pigs because of the lower cost of feed and less serious environmental problems, such as odours and noise. In addition, it is possible to get some support from the local government, such as capital to buy breeding animals, advice on management techniques etc, especially with respect to cattle.

4.2.3. Rearing systems and animal housing

Table 2.9. Rearing system and animal housing

	Rearing system			Housing	
	Scavenging/grazing	Confined	Combined	Temporary	Permanent
	No. of hh	No. of hh	No. of hh	No. of hh	No. of hh
Pigs	-	123	-	7	116
Buffalo	-	-	2	1	1
Cattle	-	5	10	4	11
Goats	-	-	1	-	1
Chickens	38	2	2	35	7
Ducks	3	5	8	9	7

Only the pig was reared solely in confinement systems, while the other species were mainly kept in scavenging/grazing and combined systems. Especially chickens and ducks were kept mainly in scavenging systems. The tendency in recent years has

been that meat and eggs from scavenging local breed chickens could always be easily sold at a higher price compared with broilers reared in industrial systems.

Chickens and ducks were always housed in simple temporary shelters, because they spend most of their time scavenging over wide areas, and can usually find safe places to sleep, such as on the branches of trees.

Poultry manure was normally considered to be a valuable fertilizer, or even a feed ingredient for ruminants, and was not considered a problem unless it contained a lot of chemicals and medicine/hormone residues. Cattle manure, too, was rarely a thought to be an environmental risk, unless large numbers of animals were concentrated in restricted areas far from agricultural fields. Waste generated from industrial swine and poultry units was often seen as the main polluter of surface and groundwater. Thus, the pig house had to be permanent and because of the smell of pig manure the house has to be properly cleaned regularly.

The reasons given for only making a temporary house were: animals could graze or scavenge (69.6%); the high cost of construction (14.3%); few animals owned (7.1%); pilot production (5.4%, most of them were starting to keep pigs and cattle); the animals would be moved to another place (1%), and finally some producers said that they may not want to continue keeping livestock (1%).

Photo 2.2. Scavenging chickens in My Thoi ward)

4.2.4. Cesspool and manure disposal

Table 2.10. Cesspool and manure disposal

	No. of hh	%
Have cesspool	126	84.0
Use manure for	50	33.3
Biogas	26	17.3
Sale	4	2.7
Fertilizer	10	6.7
Feed for fish	9	6.0
Sale and feed for fish	1	0.6

Because they are keeping livestock in urban areas, most producers pay careful attention to protect the environment. In total 126 households (84%) had a cesspool, while only 16% (24 households) did not. Except for 11 households that kept only chickens and 5 households with only ducks, there were only 6 families with pigs, 1 with cattle and 1 with goats that did not have a cesspool. Like poultry, cattle and goats are raised in combined grazing/confinement systems, so it is difficult for the owner to collect the manure, especially of goats. In addition the smell of goat and cattle manure is not as strong as that of pig manure and so is less of a problem for the neighbours. Nevertheless, some of the 6 households that kept pigs without a cesspool allowed the manure and waste matter to end up in rivers or canals.

Livestock manure was used by 50 households (33%). Depending on the kind of manure it would be used for different purposes: for example one household (0.6%) that kept both cattle and pig used the pig manure as feed for fish, and sold the cattle manure. Pig manure was commonly used as feed for fish (9 households, 6% of the total), or biogas (26 household, 17.3%), while cattle manure was sold (4 households, or 2.7%) and 10 households (6.7%) used manure (pig, cattle, chicken) as fertilizer.

Photo 2.3. Manure used for biogas

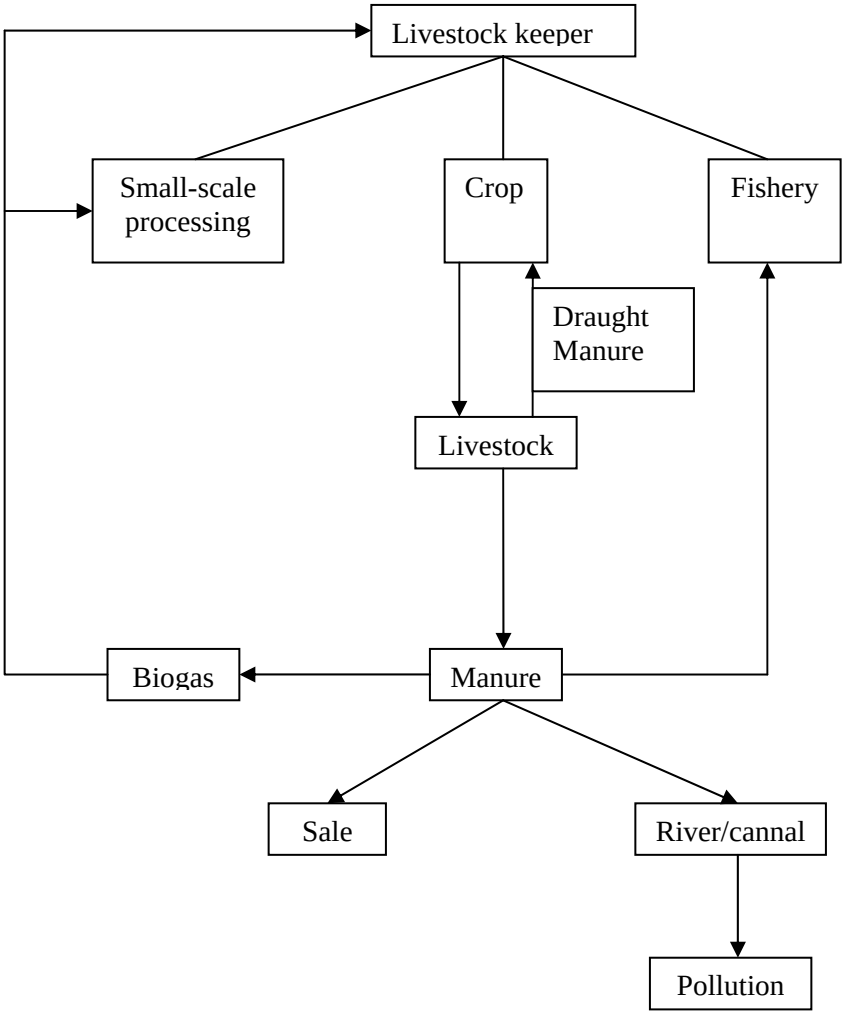

Figure 2.7: Livestock manure disposal

4.2.5. Animal feed

Feeding strategies in urban areas varied according to factors such as social category, animal species, household income, distance to the city centre and household labour available. An important difference between animals is the distinction between ruminants, such as cows, buffaloes, goats and sheep, and monogastrics such as chickens, ducks and pigs.

Table 2.11. Feeds used for monogastrics

Feed	Pigs	Chickens	Ducks
	No. of hh	No. of hh	No. of hh
Rice bran	117	2	1
Broken rice	112	15	1
Commercial feed	105	5	7
Kitchen waste	25	3	1
Soybean waste	14	-	-
Brewer's grains	15	-	-
Water spinach	6	-	-
Coconut pulp	1	2	1
Rice	-	31	14

Monogastrics. The main feeds for pigs were rice bran (117 households) broken rice (112 households) and commercial feed (105 households). Kitchen waste, soybean waste and brewer's grains were used by 54 households, as a replacement for commercial feed, which is normally very expensive. Vegetables were used for pigs, but only 6 households used water spinach to feed frequently to the pigs, while one family used coconut pulp as pig feed. (Photo 2.4)

Most families used rice as feed for their chickens (31 households), while some of those who also kept pigs used broken rice or commercial feed for chickens. Kitchen waste and coconut pulp were utilized by other families (5 households), while rice bran was normally used for small chicks.

Rice was considered to be the main feed for ducks, especially rice scavenged in the fields in the harvesting seasons. However, outside the harvesting seasons farmers had to buy commercial feeds when producing ducks for breeding or fattening. Rice bran, broken rice, kitchen waste and coconut pulp were used in the households with ducklings.

Photo 2.4. Chicken eating coconut pulp

Photo 2.5. Feed for pigs

Ruminants. The main feeds for ruminants were natural grasses, with only a few owners using other feeds like rice straw, maize stover (for cattle and buffalo) and leaves (for goats), mainly in the flood or planting seasons. Some used rice bran to supply energy when their animals had to work very hard. In urban areas, farmers occasionally said they have to find and collect grasses and weeds far from their home (Table 2.12)

Table 2.12. Feeds for ruminants

Feed	Buffalo	Cattle	Goats
	No. of hh	No. of hh	No. of hh
Natural grass	2	15	1
Rice straw	1	3	-
Rice bran	-	1	1
Maize stover	-	3	-
Leaves of trees	-	-	1

Photo 2.5., 2.6. Feed for Ruminants

4.2.6. Veterinary services, vaccination and breeding techniques

Table 2.13. Use of veterinary services, vaccination and breeding system

	Veterinary services		Vaccination		Breeding*	
	Yes	No	Yes	No	AI	NM
No of hh	128	22	116	34	75	14
%	85.3	14.7	77.3	22.7	84.3	15.7

* Only for pigs and cattle

The majority (85.3%) of households used veterinary service, most of them being families keeping pigs and ducks. Cattle and buffalo rarely get health problems,

while it was not considered worthwhile to treat poultry because it is a small species, so when sick, normally would be sold or slaughtered.

Only 77.3% of livestock owners vaccinated their livestock, including a few scavenging poultry, and pigs that were vaccinated when bought after weaning to rear for slaughter.

As shown in Table 7, 92 households kept sows and cows, of which 3 had not yet bred their animals (2 families with sows and 1 with cattle). The majority (75 households, or 84.3%) used artificial insemination to breed their animals.

4.2.7. Livestock production problems

Table 2.14. Livestock production problems

Problems	No. of hh	%
Animal feed	120	80.0
Lack of capital	97	64.7
Market	58	38.6
Labour sources	38	25.3
Poor management techniques	38	25.3
Floods	22	14.6
Poor quality breeds	19	12.7
Lack of veterinary treatment	10	6.7
Neighbours	6	4.0

Of all the livestock production problems mentioned, the animals feed was the most important, according to 80.0% of the households interviewed. Of which, the high price of feed was always a problem, particularly for pig production. Some pig producers often lacked sufficient capital to purchase feed and had to sell their animals at a low price before they had reached slaughter weight. The second most important problem was lack of capital, cited by 64.7%. The next most common problems cited were markets, finding labour, poor management techniques, floods, poor quality breeds, poor infrastructure and lack of veterinary treatment and neighbours, with 38.6%, 25.3%, 14.6%, 12.7%, 10.0%, 6.7% and 4.0% citing these problems, respectively.

Animal feeds. In total 120 households had feed problems; most complained about the high cost of feed (118 households, 98.2%), while only 2 families (1.7%) complained about difficulties in finding feed. Not all producers complained about the quality of feed, probably because of the availability of different kinds of commercial feeds today, which allowed them to change suppliers if they were unhappy with the quality or price of their usual feed company's products. According to the Vietnam Husbandry Magazine, feed accounts for 70-72% of the cost of pig production in Vietnam.

Although a rice and fish exporting country, most animal feed ingredients still have to be imported. The price of animal feed in the country is 30-40% higher when compared with other countries in South-East Asia (HTH, 2004)

High feed costs (such as for rice bran, broken rice, and commercial feed) affect producers net benefits, especially in Angiang Province, where the recent rapid growth of fish farming has resulted in increased competition between pig and fish farmers for feed ingredients such as rice bran, broken rice and commercial feed and as a result their cost has increased. Some livestock producers complained that although these high prices were acceptable for fish farmers, they were a serious problem for livestock producers.

However, the price of feed is lower in the rice harvesting periods, at least for about one month/crop. If an area has three-rice-crops/year, producers would have about 3 months per year with low feed costs. In order to solve this problem, some farmers store rice after the harvest and then process it into broken rice and rice bran by machine (Photo 2.7.). However some pig producers said that they intended to rear other species of livestock.

Photo 2.7. Processing machine

Capital. In total 97 households stated that they had problems with raising capital, but only 53 families loaned money: 45 households loaned capital from the bank, and 8 loaned from private sources. Six of 8 households that loaned from private sources said that they did not have anything to offer as security; one producer complained about red tape and one about high interest rates.

In most cases livestock production was spontaneous and opportunistic, depended on household capital and lacked support from government. Therefore it was very difficult for producers to loan capital from government banks, and they were forced to borrow money from private lenders, reducing their profit margins.

Markets. Forty-eight livestock producers complained about markets, mainly with respect to low prices paid for the products (38); One complained about cheating on the weight and eight complained about both these issues. Where they could sell, or

who would buy their products was not considered to be a problem; a so-called middle-man would come and buy their products. However, if the farm was far from the urban center, the price of the product would be reduced because the middle-man had to pay the cost of transport. According to one livestock producer, the government should not allow imports of pigs from other provinces, as this reduces the price of products in the area.

Labour supply. Thirty-eight producers said that they experienced problems with labour supply, for example a lack of labour (13 producers), poor health (12 producers), limited technological knowledge (10 households), and lack of time (3 households). In spite of these problems and difficulties only one household used their children to help take care of their livestock.

Poor management techniques. When discussing management techniques, 38 producers said that they experienced this as a problem. There was a difference between poor and wealthy producers. While wealthy producers said that if they still lacked good husbandry techniques they could improve their knowledge by attending training courses, reading books or magazines, or listening and watching farming programmes on the radio or television. Poor producers on the other hand mostly said that they had a good basic knowledge of husbandry techniques, that they had learned when young, and that this was adequate for them to keep animals.

Floods. In total 22 producers said they usually experienced problems in the flooding season. Of these 14 producers had problems with housing (6 in My Hoa Hung, 4 in My Xuyen, 3 in Binh Duc and 1 in My Thoi), while 6 had difficulties with feed for animals and 2 with water supply.

Poor genetic quality of local breeds. Nineteen households complained about the genetic quality of their animals, particularly of their pigs. This was one of the main reasons for the price of pig meat and live animals being low. They want to improve the quality of their breeding animals. Some had tried unsuccessfully, and thought that they should get support from the government

Lack of veterinary treatment. Because there is only one veterinarian in each ward or commune, veterinarians have difficulties in managing their area and are overworked. In addition, some veterinarians had to hold more than one official position and so were often late, or unavailable when called out to treat a sick animal.

Neighbours. There were only 6 producers that stated that had problems with their neighbours (5 households in Binh Duc ward and 1 household in My Hoa Hung commune). Most producers complained about odours when the temperature became high, and pollution in the flooding season. One complained about the flies, which were considered to be a more serious nuisance than previously.

4.3. Producer opinions

4.3.1. Avian influenza and its consequences for them

Table 2.15. Producer opinions on avian influenza and its possible consequences

Opinions on	No. of hh	%
Avian influenza		
Very dangerous	15	10.0
Dangerous	44	29.3
Not particularly dangerous	86	57.3
Do not know	5	3.3
Poultry production		
Will stop keeping poultry	39	26.0
Continue keeping poultry	95	63.3
Will move to other species	2	1.3
Do not know	14	9.3

At present, avian influenza is generally considered to be a dangerous disease for both poultry and humans. However, most livestock producers (57.3%) thought that avian influenza was not particularly dangerous, and only 29.3% thought it dangerous, 10% very dangerous and 3.3% did not know. The reason is that at the time of the interviews, avian influenza was not as widespread and serious as now, and had not occurred in this area of the Mekong delta. Most producers thought that they could continue keeping poultry (63.3%), and only 26% thought they may have to stop: 1.3% thought they would move to another species and 9.3% said they did not know.

4.3.2. Location of farm

Table 2.16. Location of farm in relation to residence

Opinion	No. of hh	%
Near residence	3	2.0
Far from residence	139	92.7
No opinion	8	5.3

Although most animal houses are connected to a cesspool, as many as 92.7% of livestock owners preferred to keep their animals far from their residence as they did not want to upset their neighbours through subjecting them to unpleasant odours, pollution of the environment and water sources, attracting flies, noise or even transmission of disease. Keeping the livestock some distance from the residence might also reduce the risk of spread of diseases between animals and humans, because diseases would be transmitted more slowly in less densely populated areas.

However 2% said that they like keeping livestock near their residence, as it is easier to sell the products directly at a high price and they did not need to use a middleman. 5.3% of livestock keepers did not have any strong opinion as to where they preferred to keep their animals.

4.3.3. Future plans

Table 2.17. Future plans for livestock

Future plans	No. of hh	%
Intend to expand	79	52.7
Do not want to expand	53	35.3
Change to other species	3	2.0
Stop production	9	6.0
Do not know	6	4.0

52.7% of producers questioned wanted to expand their livestock production. The reason was to increase incomes and benefits from their animals. However, 35.3 % of producers did not want to expand because they did not get sufficient benefits, or their profits were low or they even lost money. A few (2.0%) of livestock producers wanted to change to other species, and 6.0 % of them wanted to stop raising animals completely. In addition livestock production in urban areas depends on the area of the farm. According to the head of the Environment Department in Long Xuyen, they do not allow livestock production in residential areas, particularly in the central areas of the city, in order to protect the environment. The province has no environmental support policies for livestock production, except for advising producers how to reduce environmental pollution, for example by installing a biogas digester or a cesspool. Also if a neighbour complained about the environment the producer had to stop rearing animals immediately.

"Do not know" means that the producers' decision would be based on the net benefits of their livestock enterprise. If profits were good, they would increase their production, if not they would decrease or even stop producing animals.

According to the management of the slaughter-house in Long Xuyen city, the normal potential for slaughtered animals was 200-250 head per day. However, at the time of the interviews they in fact they only slaughtered 150-170 pigs and around 12 cattle and buffalo per day. The number of livestock that were slaughtered in 2004 was lower than in 2003 because of reduced livestock production in the region. In recent years, the middle-men would normally buy up an average of 5-7 head per day, but this has decreased to only 3-4 heads per day. In particular, since the avian influenza outbreaks, the consumption of poultry has declined strongly and many consumers have changed to pork and fish. Pigs are now transported into the city from other areas or other provinces to the city in order to meet the increased demand for pork and ensure food security.

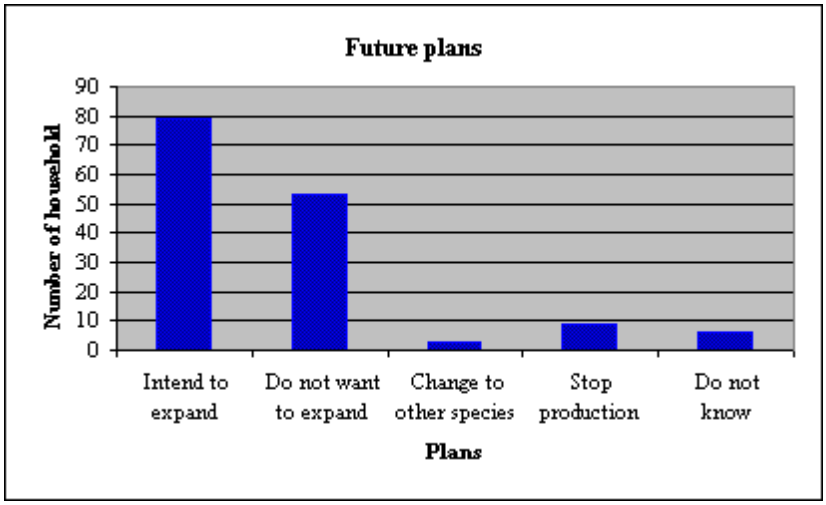

Figure 2.8. Future plans

Photo 2.7. Pigs transported from Cho Moi to Long Xuyen city

4.3.4. Suggestions of the livestock producers for improving livestock production in Long Xuyen City

- Establish livestock production unions to stabilize feed costs, and the price of products and markets, as livestock production is affected by all of these issues.
- Increase the number of animal husbandry programs on television
- Increase the number of training courses on improved husbandry techniques and veterinary practices in order to help producers improve the efficiency of production.
- Veterinarians should work more closely with the producers in order to avoid the spread of diseases.

- Improve and support breeding programs
- Do not allow import of pig products from other areas.

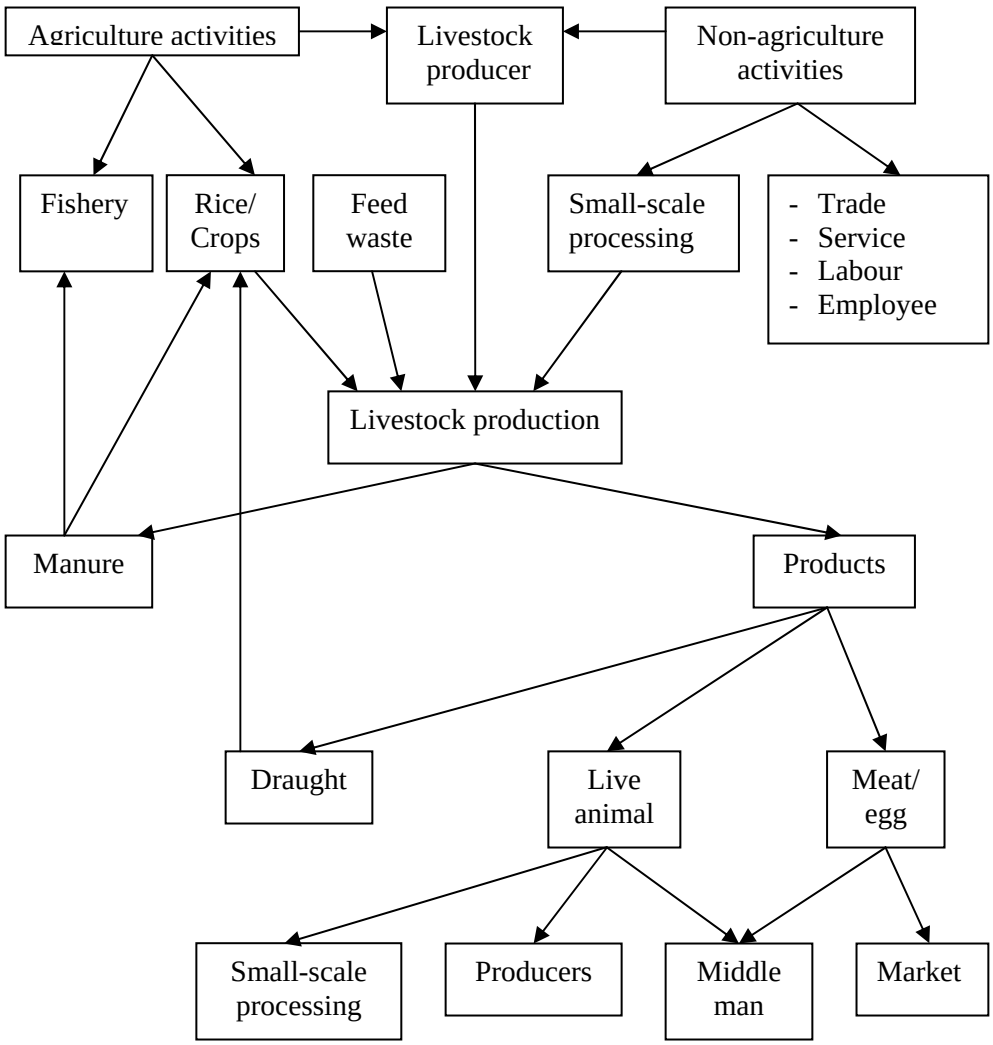

Figure 2.9. Livestock systems in Long Xuyen city

4. Conclusions

Although livestock keeping in Long Xuyen City does not account for more than 10-30% of the total income of families and also involves a number of problems, 52.7% of livestock keepers intended to expand their production. The reason given is that livestock play an important role in employment generation and increasing income for, in particular, poor households, small families or landless households, especially women. This was the main subject of the "Poverty Eradication Strategy" and "Women's Strategy" in Vietnam. In addition, livestock also play a role in increasing food security in urban areas.

Since the outbreak of Avian influenza in the Mekong Delta, the quantity of poultry meat and eggs produced and consumed has decreased strongly, while consumption of pork and fish and other meats has increased. Pigs are transported from other areas and provinces and prices have improved, so it is important that livestock production should continue in the city. However, producers must pay more attention to the environment, in particular with respect to pollution.

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