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A GENERAL REVIEW AND A DESCRIPTION OF THE **POULTRY PRODUCTION** IN VIETNAM JANUARY 2008



Edited by: **Stéphanie DESVAUX** CIRAD **Vũ Đình Tôn** CIRRD HAU1



**A GENERAL REVIEW AND A DESCRIPTION
OF THE POULTRY PRODUCTION IN VIETNAM
JANUARY 2008**

Stéphanie Desvaux, CIRAD - Agricultural Research Centre for International Development c/o NIVR – National institute of veterinary Research, Hanoi Vietnam

Vu Dinh Ton, CIRRD - Centre for Interdisciplinary Research on Rural Development, HAU1, Hanoi Agricultural University number 1, Vietnam

Phan Dang Thang, CIRRD - Centre for Interdisciplinary Research on Rural Development, HAU1 - Hanoi Agricultural University number 1, Vietnam

Pham Thi Thanh Hoa, NIAH – National Institute of Animal Husbandry c/o CIRAD, Hanoi, Vietnam

SUMMARY

Summary

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Marisa Peyre and Jean-Francois Renard from CIRAD, Montpellier, France.

Nguyen Thi Lien Huong from Thuy Phuong Poultry Research Centre, Hanoi, Vietnam.



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Poultry production in Vietnam: facts and figure

Vu Dinh Ton, CIRRD - Centre for Interdisciplinary Research on Rural Development, HAU1, Hanoi Agricultural University number 1, Vietnam

Phan Dang Thang, CIRRD - Centre for Interdisciplinary Research on Rural Development, HAU1 - Hanoi Agricultural University number 1, Vietnam

Pham Thi Thanh Hoa, NIAH c/o CIRAD/ NIVR, Hanoi, Vietnam

Stéphanie Desvaux, CIRAD - Agricultural Research Centre for International development c/o NIVR – National institute of veterinary Research, Hanoi Vietnam

1. Poultry production in Vietnam in 2000-2006

Vietnam is an agricultural country with **70% of population living in rural area** (61,332,200 / 84,155,800 persons). **Ninety percent of households** (about 8 million households) **keep poultry**. Thus, poultry production plays an important role in household economy by contributing for 19% of the households incomes, the second rank after pig production (DLP (1), 2006).

In 2006, the poultry population was estimated around **214,565,000**. Chickens account for 73% of total poultry population and waterfowl for 27% (DLP (1) (2), 2006). The total **poultry meat production** (live weight) was estimated to be **321,89 thousand tons** and the number of eggs produced was **3,9 billions** (GSO, 2007). The annual output value from poultry production was estimated at 3 619,3 billion dong at constant 1994 prices accounted for around 13% of the total livestock output value in 2006 (GSO, 2007).

The poultry meat accounted for around 11% of total meat consumption per capita in 2005 (USDA, 2006).

Average growth rate of poultry herds for the period 1990-2003 was 7% (GSO, 2007). However, the total number of poultry heads decreased of about 14%-16% since 2004-2006 due to the Avian Influenza epidemic. As shown in Table 1, growth rate of poultry production from 2000-

2006 is only 1.5% (1.3% for chicken production and 2.2% for duck production)

The evolution of poultry heads between 2000 and 2006 is shown in figure 1.

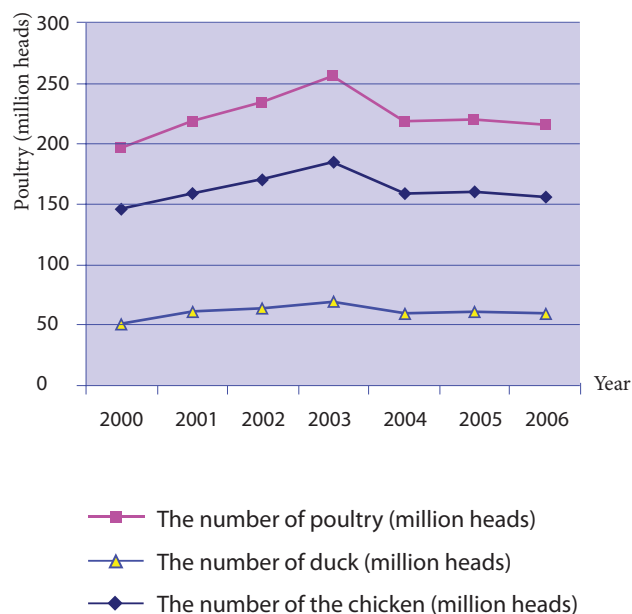
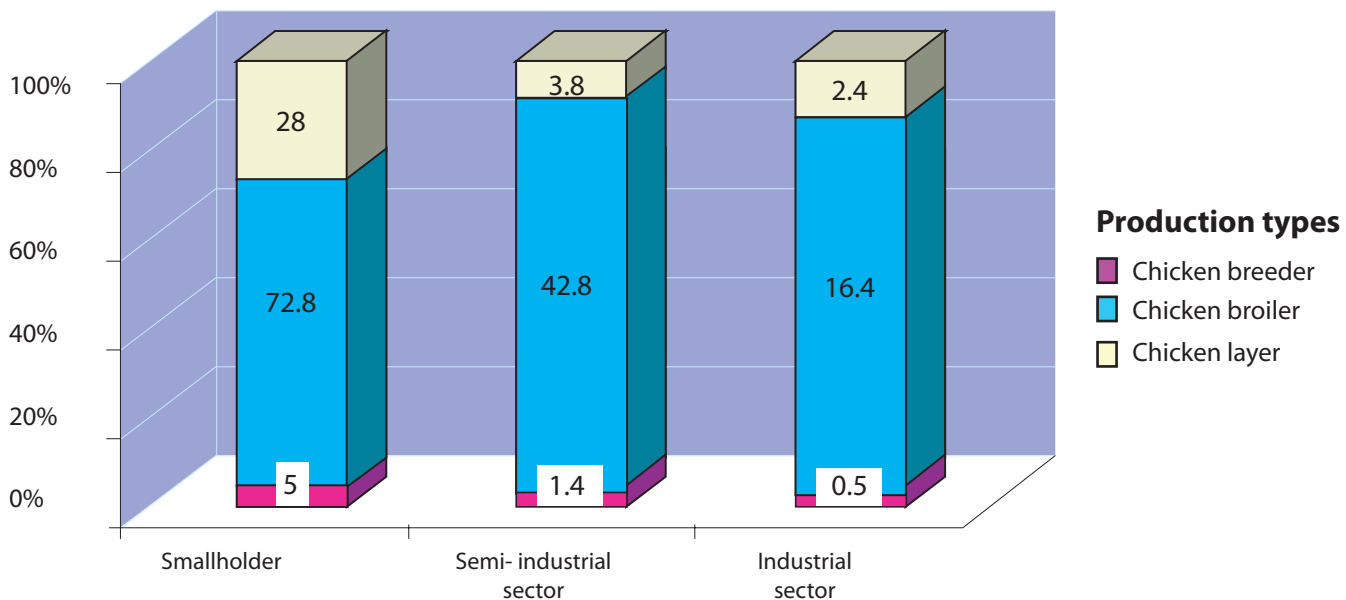


Figure 1. Number of poultry heads in Vietnam in 2000-2006 (source Statistic yearbook, 2001-2006; DLP, 2006)

Chicken population in 2005 (million heads)

The poultry population is mainly made of chicken and duck broiler production as shown in figure 2.



Waterfowl population in 2005 (million heads)

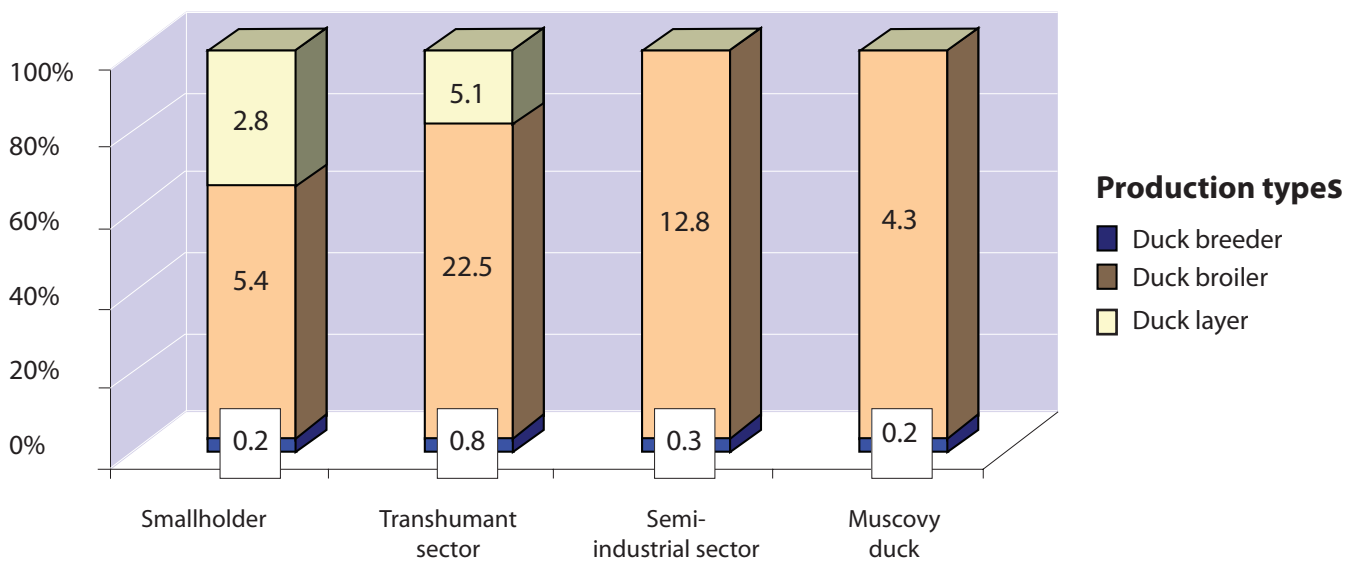


Figure 2. Repartition of the poultry population per species and per sector, according to MARD production sector categories (Source: DLP (1) (2), 2006)

2. Repartition of the poultry population and the growth rates between the agroecosystems in 2000-2006

Red River Delta, Mekong River Delta and North East regions are the agroecological regions with the **highest population of poultry** in the country as shown in table 1.

The poultry population and growth rate per agroecological region are presented in the table 1. Due to Avian influenza epidemic the poultry herd in 2004 decreased of 26% in the South and of 19% in the North compared to 2003.

Before AI outbreak (2000-2003), the global

growth rate of the poultry production was 9.1% and it becomes negative for the period 2003-2006 (Table 1).

Table 1. Poultry population, growth rate and density per region (Source: Statistic yearbook, 2001-2006; DLP, 2006; GSO 2007; authors's calculation)

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Region	Average growth rate			Poultry Population in 2006 (x 1000)	Poultry density in 2006 (x 1000)	Chicken population in 2006 (x 1000)	Duck population in 2006 (x 1000)	Chicken density in 2006 (head/km ²)	Duck density in 2006 (head/km ²)
	2000-20006	2000-2003 (before AI outbreak)	2003-2006 (during AI outbreak)						
Red River Delta	1.8	7.6	-3.8	58.391	3975.0	40,600	13,000	2763,9	885,0
Mekong Rive Delta	-3.1	5.4	-10.9	36.380	909.8	19,800	20,300	495,2	507,7
North East	4.9	10.1	-0.1	42034	659.3	33,000	6,900	517,6	108,2
North Central Coast	6.7	17.7	-3.2	33.238	629.1	23,200	8,200	439,1	155,2
South East	-4.7	6.1	-14.5	15,430	442.1	17,100	3,500	489,9	100,3
South Central Coast	-1.4	5.8	-8.2	12,537	374.0	9,600	4,500	286,4	134,3
North West	42	18.1	-8.1	8,753	218.8	2.900	1,200	72,5	30.0
Central Highlands	9.5	15.6	3.7	7,808	148.2	6,500	900	123,4	17,1
Whole country	1,5	9,1	-5,5	214571	645,6	152,7	58,5	459,4	176,0

3. Herd size and poultry density

In total 8 million households keep poultry from which:

- 65% of households keep chickens in small numbers (less than 200 heads/year);

- 25% of households keep waterfowl, mainly ducks;
- 10-15% are chicken commercial farms with herd size from 200 to 500 heads

- 0.1% are integrated industrial farms with herd size from 2000 to 30 000 chickens heads. These farms are often integrated with foreign feedstuff companies such as: CP group, Japfa, Cargill, Proconco. (DLP, (1) (2), 2006). In **2006**, the average **poultry density** of Vietnam was around **650 heads/km²** (450 heads / sq km for chickens and 180 for ducks). Red river Delta and **Mekong River Delta** are the regions with the highest density of poultry (see figure 3 and

table 1). In **Red River Delta region**, the poultry density was **around 4 000 heads/sq km** (2763 chicken heads/sq km and 885 duck heads/sq km). In the Mekong River Delta, average poultry density was **around 900 heads/ sq km** (495 chicken heads/sq km and 507 duck heads/ sq km). The North West and Central Highlands regions have the lowest poultry density (respectively 218 and 148 heads/ sq km),

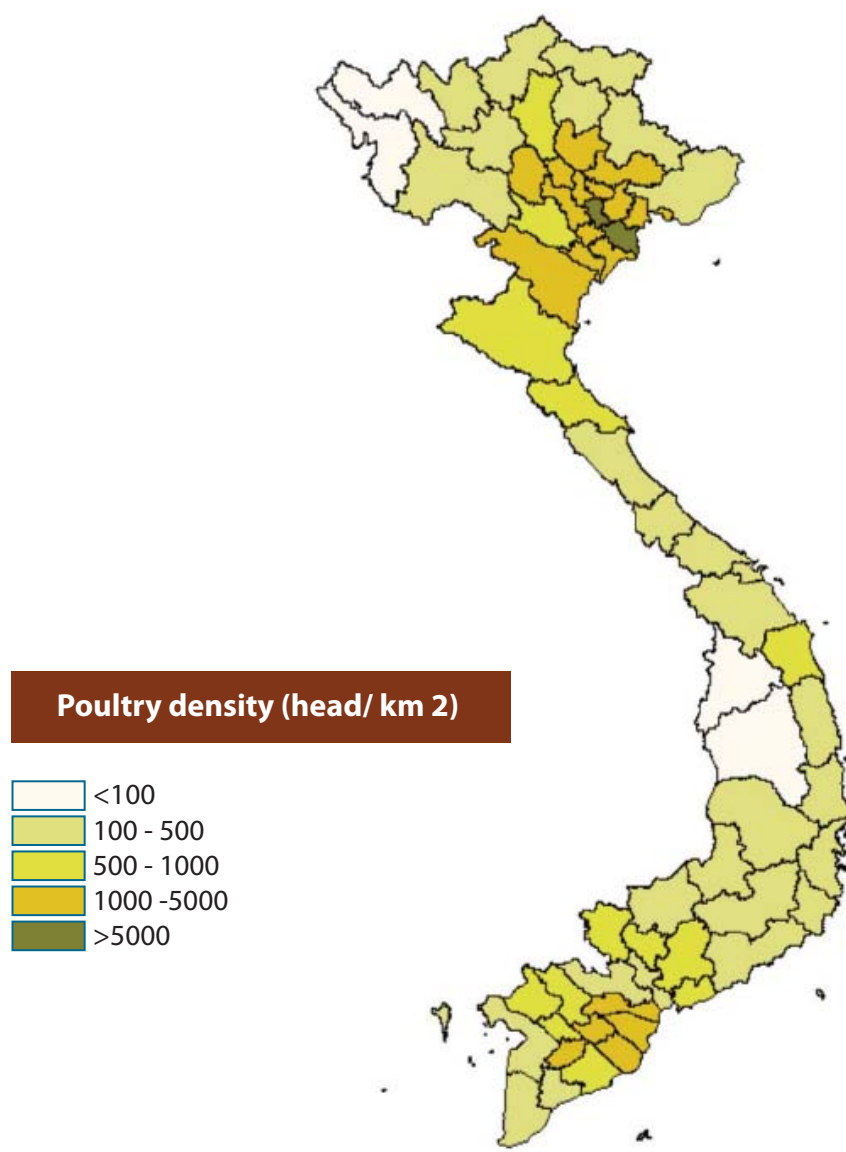


Figure 3. Poultry density of Vietnam in 2006 (data source: GSO, 2007, authors’s calculation)

4. Development of industrial poultry farms in Vietnam

The poultry production in Vietnam is mainly in the hands of small holders, closed to habitant area. However, poultry production in farms of medium to big size, in separated area is increasing since few years. According to an inter-ministerial circular issued in 2000 (69/2000/TTLT/BNN-TCTK), a **poultry farm is defined as a farm with more than 2000 heads and an annual income of more than 40 millions VND.**

The Department of Livestock (DLP (3), 2006) report **2,837 poultry farms** meeting this definition **in 2006** (accounted for 17% of the total livestock farms in Vietnam). Out of those 2, 837 poultry farms, there are 68.8% chicken broiler farms, 23.5% duck broiler farms and 7.7% breeder farms (figure 4).

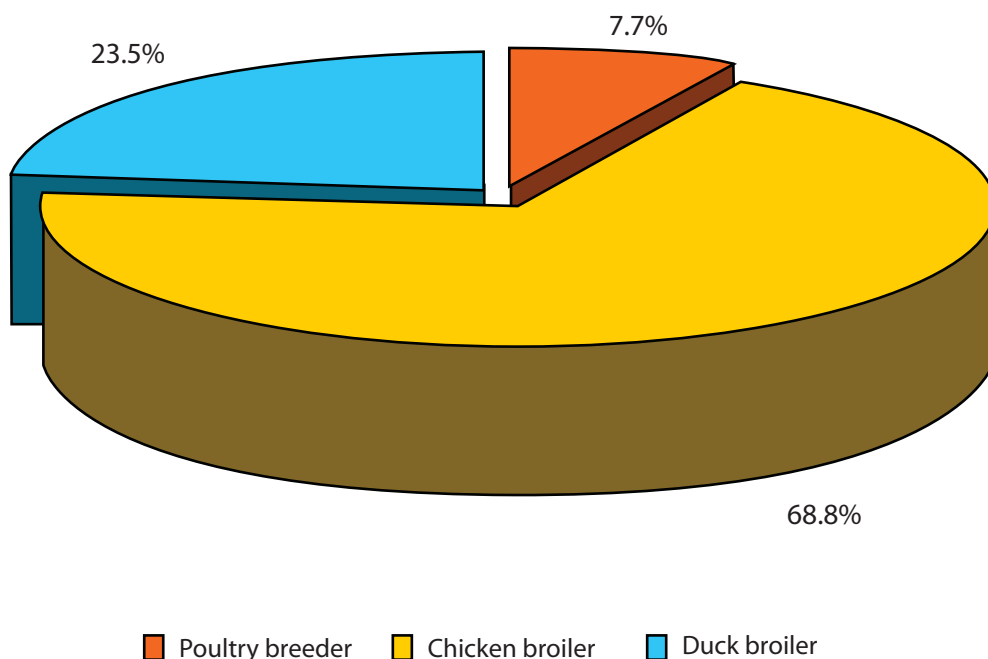


Figure 4. Percentage of poultry industrial farms (source: DLP (3), 2006)

Commercial poultry production sector is well developed in the Red River Delta, the Mekong River Delta and the Southeast regions, accounted for 68% of total number of poultry farms in whole country and is still limited in Northeast (2.7%), Northwest (1.5%) and High Land (Tay Nguyen) (4.5%).

They are **219 breeding farms registered** in Vietnam, most of them have an herd size from 2,000 to 11,000 heads; only 5.5% have an herd size over 11,000 heads. The breeder farms are mainly concentrated in Red river Delta and

Southeast region.

Chicken broiler farms with herd size of 2,000-11,000 are common (93.5%), chicken farms with herd size of 11,000-15, 000 count about 3.4% and there are 3.1% chicken farm with over 15,000 heads.

Duck broiler farms with herd size of 2,000 to 5,000 are prominent (97.8%). There are about 2% farms with herd size from 5,000 to 11,000 heads and 0.2% of duck farms having over 15, 000 head.

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Description of the poultry production system in Vietnam

Stéphanie Desvaux, CIRAD - Agricultural Research Centre for International development
c/o **NIVR** – National institute of veterinary Research, Hanoi Vietnam

Phan Dang Thang, CIRRD - Centre for Interdisciplinary Research on Rural Development,
HAU1 - Hanoi Agricultural University number 1, Vietnam

Pham Thi Thanh Hoa, NIAH c/o CIRAD, Hanoi, Vietnam

Nguyen Thi Lien Huong, Thuy Phuong Poultry Research Centre, Hanoi, Vietnam

Production sector definitions

Different classification are currently used in Vietnam. There are presented here as well as the definition used for the description of the production system.

1. Description of Vietnam poultry production sectors based on FAO classification

Sector 1. Industrial integrated system

Industrial integrated system with high biosecurity level and birds/products marketed commercially (e.g. farms that are part of an integrated broiler production enterprise with clearly defined and implemented standard operating procedures for biosecurity).

Sector 2. Industrial sector

Commercial poultry production system with moderate to high biosecurity and birds/products usually marketed commercially (e.g. farms with birds kept indoor continuously; strictly preventing contact with other poultry or wildlife)

Sector 3. Semi-commercial sector

Commercial/Semi-commercial poultry production system with low to minimal biosecurity and birds/products entering live

bird markets (e.g. a caged layer farm with birds in open sheds; a farm with poultry spending time outside the shed; a farm producing chickens and waterfowls).

Sector 4.

Village or backyard production with minimal biosecurity and birds/products consumed locally.

2. Classification from the Ministry of Agriculture and Rural Development, MARD

Source: MARD 2006

Village farming systems:

- Free ranging birds with valorisation of household leftovers or locally procured inputs. This production system represent in Vietnam:
- 65 % of the chicken farms (around 60- 70% of the chicken sold per year – around 110 millions of birds)
- Around 15 to 20% of the ducks population

Duck transhumant farming system

This system is mainly present in the Mekong delta region with ducks moved from one province to another.

Semi-industrial farming system

- Birds kept in housed and fed with industrial feed.
- Production size between 200 to 500 birds.

This type of farming system represents:

- 10 to 15% of the chicken farms (25 to 30% of the total chicken production)
- Around 10 % of the duck population

Industrial chicken farming system

- Birds kept in modern housing systems with control of inputs.
- Improved breeds.
- Generally linked to a foreign company (C.P. Group, Japfa, Cargill, Proconco in the provinces of Ha Tay, Vinh Phuc, Thanh Hoa, Khanh Hoa, Dong Nai, Binh Duong)

This production system represents 18 to 20% of the chicken production but only 0,1% of the farm keeping poultry.

3. Classification from the General Statistical Office, GSO.

Sector 1: farms with more than 2000 birds per cycle

Sector 2: farms with 150 to 2000 birds per cycle.

Sector 3: farms with 40 to 150 birds per cycle.

Sector 4: farms with less than 50 birds per cycle.

In our presentation, we use the following definitions

Traditional farms: farms with less than 50 birds per cycle or in “continuous” production without organisation by lots and marketed partly locally. This definition fits the “sector 4” FAO’s definition and “Village” MARD’s definition.

Semi-industrial farms: farms with more than 50 birds per cycle and with null to medium biosecurity level and showing increased market integration and marketing network.

This definition is a combination of:

- “sector 3 and 2” FAO’s definition
- “semi-industrial” MARD’s definition with no upper limit of size since the limit is quite arbitrarily
- and MARD “transhumant duck” definition

Traditional and Semi-industrial production systems in Vietnam: a qualitative description

Production systems are described here in term of species and breeds, final products and housing systems.

Those descriptions are based on literature review and field observations during surveys performed in 2007 in the Red River Delta and in the Mekong Delta.

Traditional farming system

Overview

This sector is defined as traditional or 'backyard' farmers. The number of birds per cycle is limited (typically less than 50).

The vast majority of poultry farms in Vietnam fall into this category.

According to the 2001 census these farms produce about 65 percent of Vietnam's chicken stock and 60 percent of its duck. Most chicken – 92 percent – are broilers, with the remainder kept for eggs (GSO 2004).

These farmers keep local breeds of poultry that generally wander freely. The animals are fed with household leftovers or locally procured inputs (paddy, bran, corn), perhaps supplemented with some industrial feed (GSO 2004).

This sector is characterized by low levels of investment and technical performance, producing breeding chicks by themselves, the absence of sanitary or technical monitoring, and long farming cycles.

One effect of poor diet and free movement is susceptibility to diseases (Delquigny et al. (2004)

Most households in this sector are often poor and their income is get from rice plant and livestock production (Thang, 2007). Not all the birds are consumed by the household and the percentage of production sold, ranging from the vast majority to less than 50%, depends mainly on the location of the farm and its access to market (Tung, 2005).

The production is either sold to local markets (mainly from the same districts), at farm-gate to assemblers or at farm-gate to neighbors. This repartition also depends on the location of the farm (Tung, 2005).

Production period: 3 to 6 months

Species, breeds: generally mixed local species.

Housing: free ranging animal within house compound or within village.

Size: Around 10 to 50 chickens of different ages per farm.

This production is both for own consumption and local commercialisation (the poorest the farmer is, the more the production will be sold, Agrifood, 2007). The own consumption increases generally during Têt celebration.



Backyard production (© P. D. Thang)



Backyard farm with chicken, ducks and geese (© S.Desvaux)

Semi- industrial sector

Overview

The semi-industrial sector is defined here as a marketed oriented production with improved technical inputs compared to traditional farming systems but still with minimum to medium biosecurity level.

This sector shows increased market integration than traditional farming system and wider marketing network (Agrifood Consulting International, 2006)

We consider a under limit of around 50 birds per cycle but no upper limit. The differences between the farms lie on the size, the technical input and the market linkage. It is difficult to give a general limit; this depends on the type of production involved,

This sector presents a great diversity based on the species, the type of production involved -breeders, broiler, layers... - that we try to reproduce in the description below.

Chicken production

Chicken breeders

Production period: 16-18 months

Main breeds: Luong Phuong, Sasso, Kabir, ISA color, Ai Cap

Housing: Confined buildings and good facilities.

Size: up to 3 000 birds.

Good technical level and vaccination coverage

Most of chicken breeders are private owned farms. Those farms usually choose some easy to manage breeds such as Luong Phuong. Luong Phuong breed presents an uniform colour in contrast to Sasso, ISA colour and Kabir breeds which are more often kept in state owned farms or foreign owned farms.

There are 11 state breeder farms with an average flock size of 10 000 to 20 000 birds. They keep grandparent and parent flock and provide one day chicks to private farms or farmers (around 50.2 million chicks per year) (Tien, 2007).



3000 chicken breeders' farm (Luong Phuong breed) in Sai Son commune, Quoc Oai district, Ha Tay province (© P. D. Thang)

They are:

1	Tam Dao Chicken Breeding Company (Vinh Phuc)
2	Ba Vi Chicken Breeding Company (Ha Tay)
3	Luong My Chicken Breeding Company (Ha Tay)
4	Chau Thanh Chicken Breeding Company (Nam Dinh)
5	Thuy Phuong Poultry Research Centre (Ha Noi)
6	Van Phuc Poultry Research Centre (Ha Tay)
7	Hoa Binh Breeding Centre (Hao Binh)
8	Livestock Research and Feed Testing Centre (Ha Noi)
9	Breeding Research and Development Centre (Central region)
10	Binh Thang livestock breeding Centre (In the South)
11	Research and Techniques Transferring Centre (In the South)

These farms are under the responsibility of MARD, with 5 farms managed by the National Institute of Animal Health (NIAH), 5 managed by the Livestock General Company and Binh Thang Centre in the South (Tien, 2007).

There are 4 foreign companies (CP group, Jaffa, Cargill and Proconco) keeping grandparent flock and producing parent chickens. They usually work with farmer under contracts.



Chicken breeder farm (Kabir breed) in Thuy Phuong Poultry Research Centre

Chicken layers

Production period:

- 6 months for pullet breeding
- 10- 12 months for the egg production

Main breeds: Ai Cap, Leghorn, Goldline, Hyline

Housing: free ranging birds in a close building without access to outdoor or caged birds.

Size: few hundred to few thousands



Laying hens (Goldline breed) in the Mekong Delta (© P. D. Thang)



Layer farm (Ai Cap breed) in Dong Yen commune, Quoc Oai district, Ha Tay province (© P. D. Thang)

Chicken broilers:

Production period: 1.5 months to 6 months depending on the breed

Main crossed breed (Luong Phuong x Sasso), imported breeds (Cob 707, Ross 308, Kabir, AA, and Hubbard ISA) and local breeds (Mia, Ri.....).

Housing:

Indoor farming: imported breeds or crossbreds are often kept indoor with good housing and facilities, using industrial feed and full vaccination coverage. This management type is characterized by high meat productivity and continuous keeping period. Herd size is increased before time of Têt festival and reduced at time of June or July due to the warm climate.

Outdoor farming: local breeds (like Mia, Ri) or crossbreds (Luong Phuong, Kabir, Tam Hoang x local breeds) are scavenging under fruit trees (in litchis production areas for instance), or in restricted area, utilizing available feed source from household (rice brand, maize, cassava....). This farming management represents less investment on housing and facilities. Industrial feed is only supplemented for the less than 1 month chickens. Local breeds usually show a higher resistant to disease, they have a

longer production period than exotic breed (4- 6months) and price of those chickens is sometimes twice higher than the imported breed produced more intensively.

Size: from 100 to few thousands



Chicken broiler farm (Ross 308 breed) in Thuy Phuong poultry research Centre



Broiler farm of Mia local breed in Quoc Oai, Ha Tay (© P. D. Thang)

Duck production

General findings

Loss of pure breeds:

It seems that a lot of crossing had happen between local and imported high productivity breeds (like Super egg or Super meat). Then, it is more and more difficult to make a clear distinction, at least in the Deltas, between the different breeds found in the field.

For instance, in the South, what was called Vit Tau, seems now to be much closed to Khaki Campbell initially originated from England and imported from Thailand.

Similarly, in the North, the local breed Vit Co, is less common and was crossed with different other breeds.

Flock management in relation to rice production:

A part of the duck production is highly seasonal and in relation with rice production (with 2 and sometimes 3 production periods a year according to the number of rice production cycles in the area).

The ducklings can be brought to the rice fields just after rice transplantation to control pest. When getting older, the ducks are driven out of the rice fields to canals, ditches, rivers and brought back to the rice fields during the days just after harvest for scavenging on weeds, crop residues, snails and fresh-water crustaceans (AVSF, 2006).

The main periods for this production lie between

March to July and September to December and vary according to the rice production seasonal calendar.

In the North, this duck production using rice fields is mainly intended for meat production (Bau Canh Trang breed) but not only (Super Egg breed). The animals are usually herded in the rice fields in one region (several communes) during the day but brought back in the same pen at night. Movement the duck herds between regions is not permitted.

In the South, a similar system exists with ducks herded on rice fields but able to move from one province to another.



Transport of ducks following the harvests in the Mekong delta
(© P. D. Thang)

Particular case of transhumant duck in the Mekong Delta

Source: Phan Dang Thang, 2007

In the Mekong delta the rice harvesting periods differ more from one province to another than in the North. To take advantage of those different harvest times, a transhumant duck production system started to develop in the seventeen's. Thus, the duck flocks are moved usually using boats (see picture) or roads, to follow the rice harvest from one province to another. Since quite recently (less than 10 years ago), the farmers have to pay for using the rice fields (around 100 000 to 300 000 vnd / mau – 1 mau = around 1 ha) to the owner of the rice field. As a rough guide, a flock of around 1000 ducks needs around 60 to 70 mau.

This system is mainly based on duck egg production.

The production management varies along the year:

- After harvests, the ducks are kept in rice fields following the harvest periods in the different provinces. The ducks do not receive industrial feed during those periods.
- The rest of the time and especially during flooding season (around July and August) the ducks are kept in some restricted areas close to river or pond and receive industrial feed mixed with rice (and/or small molluscs collected by farmers in the rice fields). Farmer build very simple tents for ducks staying at night and laying egg (see picture)

Transhumant Kakhi Campbell flock kept in closed pens during two periods in rice fields (© P. D. Thang)



Production period: around 20 months.

Breeds: The main breeds involved are: Super egg and Khaki Campbell, Co "canh se"

Size: the size of the flocks varies between 1000 to 3000 heads.

Duck breeders

Dual purpose production in the private farms

For duck breeds used to be herded in rice fields like Bau Canh Trang breed, it is very common to use duck flocks to produce egg for consumption or for hatching depending on the demand. Basically, there are some periods of the year during which the demand for duckling is high because of the possibility to feed birds on the

rice field after harvest (see paragraph above), then the farmers will better produce eggs for breeding.

For the Muscovy ducks or for Super Meat breed, the breeding flocks seem to be more specialised.

Production period: 12 months to 2 years (with Muscovy duck being kept longer than ducks)

Main breeds: Super Meat, French Muscovy (R51, R71, Superheavy), Sieu trung (« Super Egg »), Bau Canh Trang, Bau Quy

Housing: birds kept in a building with access to outdoor

Size: few hundred birds.



Mixed farm of Super M and Muscovy breeders in the commune of Hong Thai, Ha Tay province. (© P. D. Thang)



300 Muscovy breeders farm in Hong Thai commune, Ha Tay province (© M.Peyre)

This production is concentrated in some area, for instance Phu Xuyen district in Ha Tay province in the North. The majority of ducklings is produced by private owned farms. There are three state farms keeping grandparent and parent flocks in Vietnam. They are Thuy Phuong poultry research centre, Cam Binh farm (Hung Yen province), Dai Xuyen duck breeding centre (Ha Tay province) and VIGOVA breeding centre (Ho Chi Minh City). However, the supply of parent or commercial duckling is still low and has not yet met the market demand (MARD, 2006). Another source of duckling is made of the illegal imports at low price from China; hence the quality of breeding as well as disease control is not guaranteed (Tien, 2003)



Super Egg duck breeders farm (© S.Desvaux)

Duck layers

Production period: 1 to 3 years and sometimes only during one production cycle

Main breeds: Super Egg, Co, Khaki Campbell

Housing: Building with restricted access to rice field, channel or river

Either fully industrial feeding or combination of industrial feed and rice or maize paddy.

Size: to few thousands

Production is both for (embryonnated) eggs production or duckling, depending on the season



Super Egg female and Bau male (© P. D. Thang)



Bau Canh Trang flock in channel (© P. D. Thang)

Duck broilers based on rice field production:

Production period: 2.5 to 3 months

Main breeds: Bau Canh Trang, Bau Dat, Co, crossed breeds.

These local breeds are selected and multiplied through generations by farmers and show a quite low productivity (MARD, 2006).

Housing: Open or restricted access to rice field, ditches, river or channel. Closed pen during the night.

This type of farming system uses feed source from rice field and only supplement a small feed amount at night. They generally use industrial feed for duckling.

Size: few hundred



Duckling flock in rice field, Ha Tay province (© P. D.Thang)

Improved Duck broilers

Because the number of rice cycles is increasing from 2 to 3 per year, the period for duck to access to rice field is reduced. Furthermore, the massive use of pesticides and herbicides on rice fields reduces the quantity of feed available for ducks (insect, small fish, crab...) and farmers have to supplement with more feed. Since the local breeds have low productivity and a long

production period, the farmers tend to chose exotic breeds with higher productivity (Super meat duck, lines of French Muscovy duck). Thus, duck and Muscovy duck broiler production tends to shift to closed production with day time access to limited area (garden or small pond), using industrial feed or semi- industrial feed.



Mixed production of Super M and Muscovy intended for Dan Phuong live birds market (© P. D. Thang)

Production period: around 45 days for Super meat, around 70 days for French Muscovy ducks

Main breed: French Muscovy (R71, R51, Superheavy), Super Meat

Housing: outdoor farming.

Size: few hundred

Often mixed species: Super meat and Muscovy ducks and chickens.

Two to three flocks per year can be produced.

Integrated Duck-Fish

Fish and duck integrated system has been applied in most countries in Asia. In Vietnam, this model was common in some places such as: Dai Xuyen duck centre in Ha Tay, Ha Nam Ninh province, Cam Binh duck enterprise in Hai Hung province, Vinh long and Tu binh duck farms in the South in the 1990s (Man, 1992). Now, it is still used in some places (Hung Yen, Ha Nam, Ha Tay) but it is less frequent than before. In this system, ducklings are often raised in separated places up to one month old before being kept on the pond (Tokrishna, 1992). For each hectare of pond, around 200 to 300 ducks can be raised around the year and fish yield is said to increase for about 30 to 40% in comparison with pond without ducks (Man, 1992). Duck houses are built on the pond or near the pond/lake banks. During day time, ducks scavenge on the pond

and feed snail, crab and other food available in the water. They can be supplemented with mixed feed (rice bran, broken rice, concentrated feed...). Their manure together with wasted feed (10% of duck feed) is a nutritious source for plankton and microbiology system in the pond that represent a feed source for fish. No other supplement feed is given to fish (Tokrishna, 1992). The pond should be cleaned after 2-3 years to clear mud/sludge to improve the sanitary condition in the pond (Man, 1992). This method is seldom used in commercial scale and in most case it is proved that keeping ducks in confined houses above the pond, feeding them with industrial feed instead of duck scavenging on the pond is less profitable (Csavas, 1992). Super Meat and Muscovy, Super Egg



Super Egg female and Bau male (© P. D. Thang)

Production costs

According to Agrifood consulting International study in 2007, the unit cost of production averaged around 15,000 dong per kg across all Sectors. This ranged from 9,500 dong per kg for Sector 1 farmers, 12,000 dong per kg for Sector 2 farmers, 10,800 dong per kg for Sector 3 farmers and 16,000 dong for Sector 4 farmers (according to category defined by MARD).

There are clearly economies of scale as the scale of production increases, but the cost of upgrading from Sector 3 to Sector 1 (as an example) would only be worth if the unit cost of upgrading was less than 1,293 dong per kg of poultry produced. There are no benefits from

upgrading from Sector 3 to 2 as the unit costs are higher in Sector 2 than in Sector 3.

On a per kg basis, feed costs comprised 69 percent of total unit costs of production.

However, feed price is fluctuated strongly and much depended on the price of imported raw products. Therefore the production cost is varying following the feedstuff prices and any estimation of production cost is strongly related to the time the study has been done.

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Day old chick supply chain in Vietnam

Pham Thi Thanh Hoa, NIAH c/o CIRAD/ NIVR, Hanoi, Vietnam

Phan Dang Thang, CIRRD - Centre for Interdisciplinary Research on Rural Development, HAU1 - Hanoi Agricultural University number 1, Vietnam

Nguyen Thi Lien Huong, Thuy Phuong Poultry Research Centre, Hanoi, Vietnam

Stéphanie Desvaux, CIRAD - Agricultural Research Centre for International development c/o NIVR – National institute of veterinary Research, Hanoi Vietnam

1. Breeding production system

1.1 Main poultry Breeds found in Vietnam

Local breeds

Local breeds such as Ri, Mia, Ho, H'mong, Bau quy, Re.... are kept in Vietnam since thousand years. It is estimated that there are about 16 native chicken breeds, 8 local ducks and 3 local muscovy duck breeds in Vietnam and they represent more than 80% of the poultry population in the whole country (Vang, 2003). These breeds are well adapted to the local conditions and have good meat and egg quality. Local breeds are still preferred by consumers and the price is often higher than exotic breeds. However, productivity of these breeds is low due to crossbreeding and lack of selection. Production systems involving local chickens are generally based on scavenging or outdoor keeping (Vang, 2003). Selection and multiplication of these local breeds follow traditional practices by farmers. There are also private family breeding farms of local breeds, for instance Lac Hoa farm (Hoa Lac, Ha Tay province) keeps H'mong and Ri chicken, Binh Minh farm (Thong Nhat, Dong Nai province) keeps Ac Chicken, Binh Gia farm (Binh Gia, Lang Son province) raise Ky Lua duck..... (Delquigny et al, 2004). At state level, there is only one farm (Van Phuc Poultry Research Centre from

the National Institute of Animal Husbandry, Ha Tay province) selecting and crossbreeding Ri chicken but the size of flock is small and due to financial constraints the genetic quality is low (DLP, 2006).



Local chicks keeping in farm in Yen The district, Bac Giang province (© S.Desvaux)

Exotic breeds

There are 14 exotic chicken breeds, 3 duck breeds and 1 Muscovy duck breed recently imported to Vietnam. Most of them are from Europe, China, US. One of the first imported breed was Leghorn imported directly from Cuba. Then, some exotic coloured feathers breeds were imported such as Hyline (US), Goldline (Netherlands), Isa Brown (France)...

(Vang & Ly, 2000). Exotic breeds are mainly commercial breeds (layer or broiler) but some can also be kept in farmyard production system such as Tam Hoang and Luong Phuong (Vang, 2003). Grandparent and parent flocks of imported breeds are usually kept in the 12 state farms and in foreign companies.

1.2 Poultry breeding pyramid

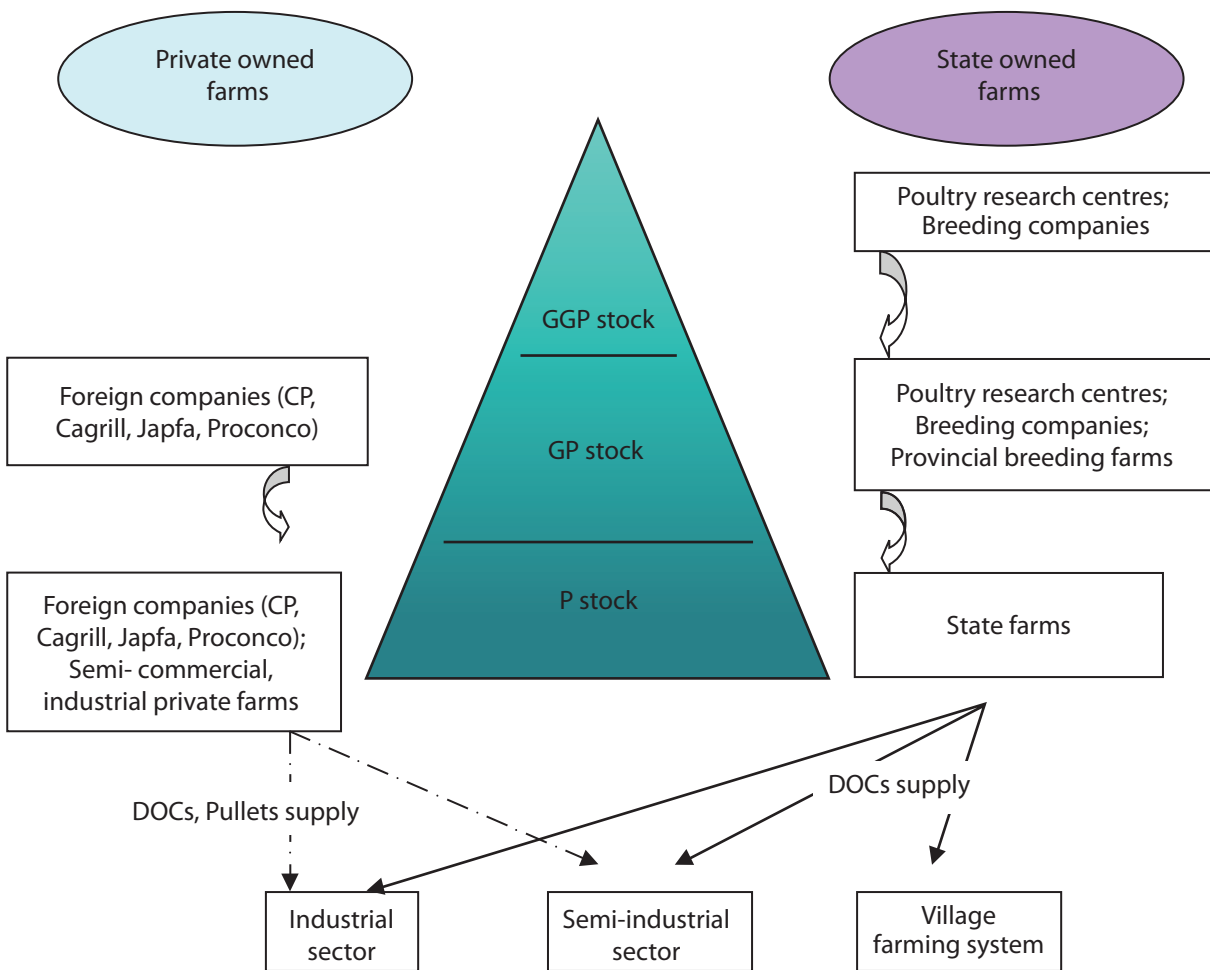


Figure 1: Poultry breeding pyramid

State farms

There are 12 state farms belonging to MARD in which 6 farms (4 in the North, 1 in the Central and 1 in the South) under NIAH, 5 farms in the

North under Livestock company and 1 farm of Southern Agricultural science institute (Tien, 2007).

They are:

- 1 Tam Dao Chicken Breeding Company (Vinh Phuc)
- 2 Ba Vi Chicken Breeding Company (Ha Tay)
- 3 Luong My Chicken Breeding Company (Ha Tay)
- 4 Chau Thanh Chicken Breeding Company (Nam Dinh)
- 5 Thuy Phuong Poultry Research Centre (Ha Noi)
- 6 Van Phuc Poultry Research Centre (Ha Tay)
- 7 Hoa Binh Breeding Centre (Hoa Binh)
- 8 Livestock Research and Feed Testing Centre (Ha Noi)
- 9 Dai Xuyen Duck Research Centre (Ha Tay)
- 10 Breeding Research and Development Centre (Central region)
- 11 Binh Thang livestock breeding Centre (In the South)
- 12 Research and Techniques Transferring Centre (In the South)

These state farms often import grandparent stocks, keep them for adaptation, selection and crossbreeding. GGP breeding stocks are only kept in some state breeding centres (Van Phuc, Thuy Phuong and Chau Thanh) (Delquigny et al, 2004). Small number of imported grandparent flocks is selected and used for pure breeding multiplication like layer or broiler species with high quality and productivity (for instance Ai Cap, Luong Phuong, Tam Hoang, Ross 308). These breeds are used in breeding programme to produce grandparent stocks that will then supply the breeding provincial farms. However, the size of the flock is still low and the genetic quality is poor.

For multiplication production system, crossbreeding is used. There are some crossbreeding formulas between local and exotic breeds as: (Luong Phuong x Mia) x Kabir chicken or Luong Phuong x Ri chicken. This multiplication appears to give

products well adapted for backyard raising (Vang, 2003).

The governmental farms also produce parent and commercial flocks to sell directly to poultry producers or households.



Eggs preparation for hatching in local hatchery (© M.Peyre)

At province level, there are some farms under provincial department of agriculture and rural development. These farms get parent stocks from state farms or directly import from overseas then produce and sell commercial day old chickens directly or via retailers to poultry producers (Tien, 2007). A system of "satellite farms" sometimes is established: these farms keep parent stocks and supply eggs for hatcheries of central farm (Delquigny et al., 2004).

In theory, poultry breeding program follow the breeding pyramid shaped organization. The state farms are supposed to supply GGP and GP stock, provincial farms carry out breeding of parent stock and production of commercial DOCs. But most public farms, in fact, survive by selling DOCs (Delquigny et al., 2004).

Private companies

Private sector has strong involvement in poultry breeding and genetic development. The number of private poultry breeding farms (parent stock) was 106 in 2006. Commercial breeding farms are dominated by a few foreign-owned poultry

holdings and almost all poultry breeding stock is now produced privately (Hanh et al., 2007). Four foreign companies (CP, Cargill, Japfa and Proconco) are fully integrated. These companies import grandparent flocks to produce parents and to supply contracted industrial farms with DOCs or pullets.



Duckling batch in private local hatchery (© M.Peyre)

2. Breeding supply in production types

Village farming system

Small producers – mainly in the North – often rely on local varieties (Agrifood, 2006). Most households that keep local breeds produce DOC by themselves but they can also buy from private local hatcheries, local markets, neighbours or state farms. These local hatcheries collect incubated eggs from breeder households in the area and sell day old chicks to producers directly or through distributors as shown in figure 2 (DLP, 2006). The price of local DOCs is higher and seems to fluctuates more in the North than the South (Thang et al., 2007)

Semi- industrial farms

This system uses either specialized or mixture of local and exotic breeds. Generally chicks

of improved breeds are bought from local hatcheries and local breeds are from local markets (Tung & Rasmussen, 2005). The price of local DOC is generally lower than those of most of exotic breeds (Ai Cap, Luong Phuong or Hybrid) in both Northern and Southern poultry production (Thang et al., 2007). Breeding supply can be from private farms or foreign companies (Tien, 2007). Agrifood Consulting reports that the majority of the semi-industrial farms – perhaps 65 percent – buy their DOC within the district, another 20 percent in other districts in the province, and the remaining roughly 15 percent from other provinces (Agrifood, 2006). Sometimes, semi-commercial producers also keep a certain number of laying hens to produce chicks for fattening (Tung & Rasmussen, 2005).

Industrial farms

For this type of farming system, day old chicks are bought from state farms or foreign companies under poultry keeping contracts. Industrial

breeding farms also have their own hatchery and sell DOCs directly or through assemblers and retailers.



Duckling waiting for sale (© M.Peyre)

3. Day old chick supply chain

According to Thang 's survey (2007), Ha Tay province concentrates the highest number of hatcheries in the whole country and provides DOCs to many farmers in the North and the Central Coast. One district, Phu Xuyen district, is particularly specialised in the DOC production with about 100 hatcheries of different sizes supplying around two millions birds per week. In the South, Long An province has the highest number of hatcheries (60) in the Mekong River Delta, mainly for duck production.

In most regions of Vietnam, the DOC supply chain is quite complicated and involves different middlemen (assemblers, retailers, chick keepers...) (as presented in figure 2).

DOCs are very often collected from different hatcheries without clear traceability, therefore the breeding quality as well as disease control are not always guaranteed.

We can notice that there are farmers specialised in keeping DOC up to one month old. This system, mainly for local chicken breeds and Muscovy duck in traditional farming system, seems to be profitable due to the high price difference between DOC and one month chick. The farmers accept to pay the difference because they can avoid the risk of having high losses at the beginning of the production cycle.

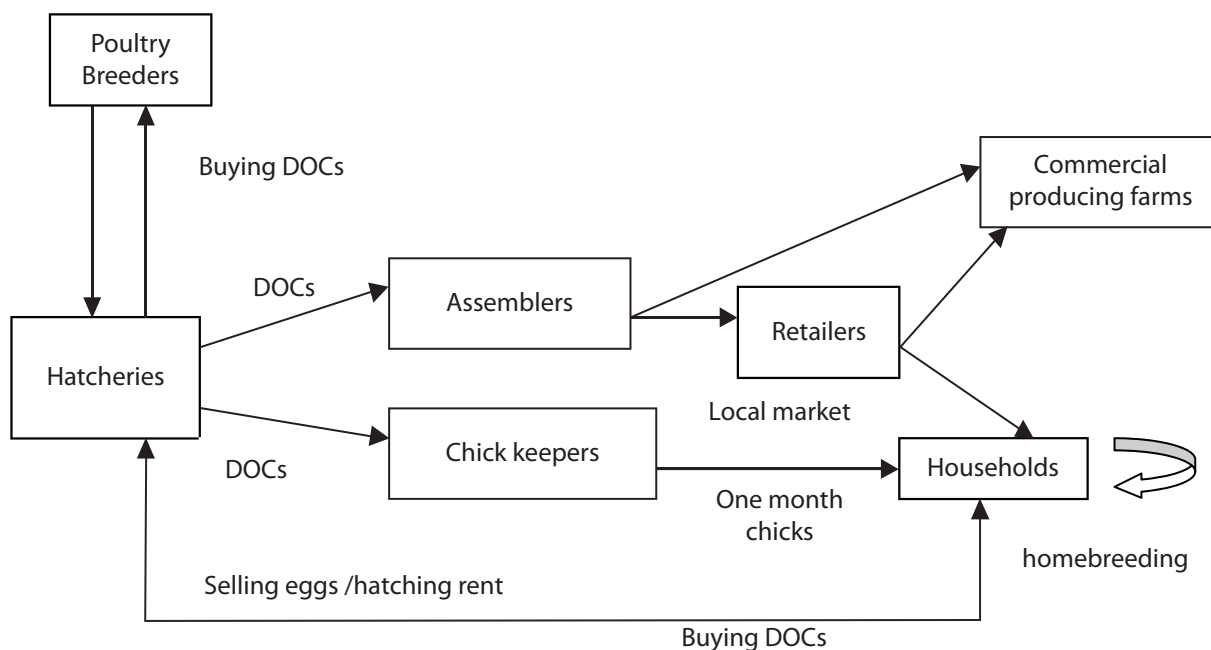


Figure 2. DOC supply chain (Source: modified from Thang and Peyre, 2007)

Before Avian Influenza outbreak (2003), poultry breeding centres, state farms and joint-ventures companies used to play an important role in providing DOCs for poultry producers in the whole country.

Vang (2003) reported that about 18% producers buy breeding chicks from state breeding farms; the remainders get it from private farms or by self-supply. The study performed by Agrifood in 2006 indicates that the State owned breeding farms supply about 15 percent of breeding chicks (down from 38% in 1995) while large private companies supply about 80 percent, and smaller Vietnamese companies – mainly in the South – supply the remainder.

After the first waves of AI, hatching was limited or even forbidden for ducks for some period while the demand for restructuring herds was increasing. Therefore, private hatching was blooming and out of control. Because of this

high demand of DOC and limited supply, private hatcheries are sometimes using eggs collected from commercial flocks instead of parent stock to produce DOC (Thang et al., 2007).



Duckling keeping in semi-commercial farm (© S.Desvaux)

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AGRICULTURAL PUBLISHING HOUSE

167/6 Phuong Mai , Dong Da, Hanoi

Tel (04) 5761 075 – 852 1940 **Fax** (04) 5760 748

Email nxbnn@hn.vnn.vn

BRANCH OF AGRICULTURAL PUBLISHING HOUSE

58 Nguyen Binh Khiem, District 1, Hochiminh city

Tel : (04) 8299 521 – 8297 157 Fax : (08) 9101 036

PCP PRISE, National Institute of Veterinary Research (NIVR)
N° 86, Truong Chinh str, Dong Da dist, Hanoi
Tel : +84-4-869 33 06
Fax : +84-4-869 50 42
Email: prise.pcp@gmail.com
Website: <http://www.prise-pcp.org>

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