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Characterization of Poultry Production Systems in Vietnam

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Abstract: Poultry raising in Vietnam is widespread and common to smallholder farmers that keep chickens and ducks as a source of cheap animal protein and to derive income from the sale of eggs, meat and live birds. Three systems of poultry production are described: 1) traditional, extensive backyard/household poultry production, 2) semi-intensive, small to medium scale, market-oriented, commercial poultry production and 3) intensive, large scale, industrial poultry production.

Key words: Poultry production systems, Vietnam, chickens, ducks

Introduction

In Vietnam, poultry are geographically concentrated near urban centres, with low density of bird populations within households. Chickens and ducks are the dominant species raised across the country and commercial operations are nearly all located in the periphery of large urban areas, such as Ho Chi Minh and Hanoi. The two large delta regions-Red River in the North and Mekong River in the South-are major poultry producing areas (VGSO, 2004; Hong Hanh *et al.*, 2007). Poultry has an important role in maintaining social relations, cultural traditions, religious events, wellbeing of children (poultry derived income is often spent on food, medicine, clothes, education) and women's economic empowerment and sense of ownership.

Definition, characterization and structure: While there are various classifications of poultry production systems based primarily on scale, official classification criteria have not been established by the Ministry of Agriculture and Rural Development (MARD) of Vietnam. For explanatory ease and based on previously published work, we propose three systems of poultry production: (1) traditional, extensive backyard/household poultry production (2) semi-intensive, small to medium scale, market-oriented, commercial poultry production and (3) intensive, large scale, industrial poultry production.

Traditional, extensive backyard/household poultry production: This production system is by far the most common production system in Vietnam, where poultry is raised in backyards, gardens, courtyards, orchards and often free to range on neighbouring land. This system is considered to be small scale, with flock size <50 birds which derive large part of their diet from free range scavenging. Birds are also given some locally available feeds and supplemented with limited amounts of home

produced grains such as paddy rice or maize and kitchen waste. The amount of feed given to birds does not focus on production efficiency but depends heavily on the availability of grains that farmers have in storage for personal consumption, as seeds for next planting season and eating needs of their livestock. Chick replacements are generally hatched from own-stock eggs, but sometimes farmers buy replacements from local markets, neighbours and/or traders to complement their flocks. Most small and medium-scale farmers keep poultry all year round and sell their animal assets as need arises. Usually, poultry-derived income is destined to buy clothes, pay for children education and purchase food (VGSO, 2004).

In 2005, approximately 8 million households engaged in traditional extensive poultry production, with an average flock size of ~32 birds, representing about 94% of all poultry producers. Since it is considered a sideline activity, attention to bird safety and health is limited and mortalities can be high: in bad weather conditions as high as 40 to 50% (VGSO, 2004). The most popular local breeds Ri, Mia, Dong Tao and Ho are raised in the North and Ta Vang (or Tau Vang) in the South. These local breeds are of low productivity in comparison to foreign-imported breeds but have characteristic yellow-orange feathering and dark skin colour features that are favoured by consumers in both rural and urban areas, particularly for traditional festivals, family gifts, marriages and for religious offerings (Hong Hanh *et al.*, 2007).

Semi-intensive, small to medium, market-oriented, commercial poultry production: This production system has larger scales and somewhat higher rates of commercialization than the previously described system and can follow some practices of the agricultural sectors of industrialized countries. This production system represents a transition stage between traditional and

more market-integrated commercial poultry production and combines traditional practices with improved technology and marketing. Poultry are both kept in enclosures and/or free to range in backyards, orchards and gardens. Apart from being given locally manufactured animal feeds, they are also supplemented with alternative feedstuffs, such as brewery and soya waste and ensiled shrimp waste (Dong, 2005). Breeds used in this system are either specialized or a mixture of local and exotic imported breeds, with flock size ranging from 51 to 2,000 birds. Farmers who are involved in this system mainly represent former government employees, current local officers, or wealthy farmers who have permanent income and some farming skills, especially knowledge of market conditions. Knowledge and capital are important factors for development of semi-intensive commercial poultry production (Hong Hanh *et al.*, 2007; VGSO, 2004).

Chicks of imported breeds are bought at local hatcheries and local chicks are obtained at local markets. The majority of semi-intensive farmers also keep a certain number of laying hens to produce chicks for fattening. From hatching to one month of age (30d), chicks brood with hens. Older birds are allowed to scavenge in backyards or gardens during the day and brought back to their housing in the evenings. The cages vary from permanent to makeshift enclosures, made mainly from local, primary building materials, such as brick or bamboo, or tree branches. Gardens are fenced with netting or bamboo material or walled with bricks. Measures for disease prevention, treatment and management are given more attention compared to traditional household production. Besides reliance on naturally available feed resources such as worms, insects, pests, vegetables and grass that birds can scavenge, they are also fed broken grains and/or commercial feeds bought from local feed outlets. This system has production cycles for meat birds of about 70 to 90 days, with intermediate mortality rates and efficiency levels (Hong Hanh *et al.*, 2007).

As in traditional backyard/household poultry production systems, commercial production outputs consist of poultry meat (breast, wings and drums), eggs (white and brown), live birds including growing chicks, broilers, laying hens, cocks and other poultry species like ducks and geese; as live bird sales are very common in Vietnam.

These outputs are sold to different buyers such as assemblers, wholesalers and various consumers. Because local poultry varieties still form an important share of the stock of these producers, quality of meat and eggs are seen as similar to that of household/subsistence producers. Thus they are suitable for both urban and rural consumers and for sale into festivals or traditional events (Hong Hanh *et al.*, 2007).

Although these farmers have the financial capacity to buy some concentrated feeds, this system is usually part-time and considered a supplemental activity, depending on income status of individual producer households. Household members are also engaged in other farming activities like cropping, raising other livestock or off-farm employment. According to Hong Hanh *et al.* (2007) about 15 to 20% of farm households are currently engaged in this mode of poultry production and by 2006 produced around 28% of Vietnam's chicken, up from approximately 20% in 2005.

Intensive, large scale, industrial poultry production:

This poultry production system in Vietnam is modelled after modern industrial poultry systems found in OECD countries. Poultry is kept indoors (confined). Facilities are well equipped and relatively mechanized, including both semi-automatic and automatic equipment. In-house cage systems are designed to accommodate internal feed systems, nipple-enabled water supplies and centralized controls for humidity, ventilation, lighting, curtain movements and waste management. Some systems have more extensive automation, including remote monitoring and computerized controls. This production system has emerged over the last 10-12 years in Vietnam.

Initially, the industrial production model was promoted through large-scale foreign direct investments and aided by structural enlargements. Multinational agro-food conglomerates expanded their networks through contract farming with more established local agricultural interests. Local studies explain that larger domestic farms are the primary recipients of genetic material, technology, health services and marketing support by foreign companies. Because of large initial costs, as well as economies of scale, foreign partners have shown a strong preference for established, larger scale enterprises (i.e. flock sizes of more than 2,000 and up to 100,000 birds).

Farms with automatic equipments have sizes in the 8,000 to 15,000 bird range and above and partnerships are limited to the more experienced and higher income local farming interests. This mode of production is intensive with higher levels of investment in animal health standards, housing maintenance and flock productivity. The main products are eggs, meat and breeding stock, which are sold to different buyers like assemblers, traders or wholesalers and consumers. This sector currently produces about 10% of Vietnam's chickens (Hong Hanh *et al.*, 2007; VGSO, 2004).

In 2006, according to Vietnam's statistics office, 2,837 intensive industrial poultry production farms operated in Vietnam. Of these, 1,950 were chicken farms (mainly broilers but also layers), 668 were duck and/or geese farms and 219 were breeding farms. These industrial farms are mainly located in the Red River Delta (900 farms or 31.7%), the North-South Region (522 farms or

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Table 1: Number and location of industrial poultry farms (flock size >2,000 birds)

	Region	Chicken farms	Duck and Geese farms	Breeding farms	Total
A	Northern	859.0	242.0	173.0	1,274.0
	%	44.1	36.2	79.0	44.9
I	North East	72.0	2.0	2.0	76.0
	%	3.7	0.3	0.9	2.7
II	North West	42.0	0.0	1.0	43.0
	%	2.2	0.0	0.5	1.5
III	Red River Delta	590.0	141.0	169.0	900.0
	%	30.3	21.1	77.2	31.7
IV	North Central Coast	155.0	99.0	1.0	255.0
	%	8.0	14.8	0.5	9.0
B	South	1,091.0	426.0	46.0	1,563.0
	%	55.9	63.8	21.0	55.1
V	South Central Coast	263.0	141.0	10.0	414.0
	%	13.5	21.1	4.6	14.6
VI	Central Highlands	99.0	29.0	0.0	128.0
	%	5.1	4.3	0.0	4.5
VII	South East Region	479.0	18.0	25.0	522.0
	%	24.6	2.7	11.4	18.4
VIII	Mekong River Delta	250.0	238.0	11.0	499.0
	%	12.8	35.6	5.0	17.6
	National Total	1,950.0	668.0	219.0	2,837.0

Source: Vietnamese MARĐ, Department of Livestock Production, 2007

18.4%), the Mekong River Delta (499 farms or 17.6%) and the South Central Coastal Region (414 farms or 14.6%), with the remainder in the North Central Coast, the Central Highlands, the North East and the North West with 9.0%, 4.5%, 2.7% and 1.5% respectively (see details Table 1).

Some provinces in close proximity to major urban areas have large numbers of intensive, industrial poultry farms; including Ha Tay (392), Binh Dinh (315), Binh Duong (235), Kien Giang (179) and Ha Nam (134) [as referenced by Hong Hanh *et al.* (2007)]. The proximity of animal farming operations to major city hubs has been a human health and environmental concern to Vietnamese government officials and agencies. Animal farms closeness to large human populations pose major threats for zoonotic diseases transmissions and dispersion of unpleasant odours.

Within the industrial poultry sector, flock sizes in the range of 2,000 to 5,000 birds account for 69% of chicken operations, 98% of duck and geese operations and 73% of poultry breeding operations, while operations with more than 11,000 birds only account for around 6% of industrial operations. Farms under contract with foreign investors, international conglomerates and large domestic companies commonly have flock sizes ranging from 4,000 to 5,000 birds (Hong Hanh *et al.*, 2007).

Breeds raised in industrial-scale farms are mainly imported. In the case of broilers, production cycles are between 42 and 45 days (~6 weeks) and birds weighing about 2.2 to 2.4 kg when finished, while layers produce 270 to 280 eggs per year. Marketing is based on three main channels: through assemblers, company abattoirs (both foreign and domestic companies) and marketing

cooperatives. Marketing through foreign-owned abattoirs (i.e., slaughterhouses) represents about 45 to 50% of industrial poultry market flows. Marketing poultry products through farmer-based marketing cooperatives has recently been established in several provinces such as Hai Duong, Ha Tay, Bac Ninh, Hung Yen, Thanh Hoa, Ho Chi Minh city and Tien Giang. Financial data for this specific production system are: profit per broiler is between 1,000 and 4,000 VND/kg (\$0.061-\$0.243/Kg), whereas profit per egg is between 50 and 150 VND/egg (\$0.003-\$0.009/egg) (Hong Hanh *et al.*, 2007).

Average investment for a large-scale, industrial chicken farm is about 50 to 60 million VND (\$3,040-\$3,648) per 1,000 birds and an average broiler house holds 20,000 birds. To meet this entry requirement, chicken farm owners have to mobilize capital from different sources such as commercial and agricultural banks, credit institutions, savings and relatives. There are different types of entrepreneurs establishing industrial poultry enterprises such as wealthy farmers, retired government officials, ex-army officers and consummate professionals. Family members, neighbours and local dwellers are mobilized to operate farms and represent about 70 to 80% of the labour force in the industrial sector. Feedstuffs represent ~80% of costs and production costs are contained through use of family labour (Hong Hanh *et al.*, 2007).

About 30% of industrial farms recruit part-time labour from outside (village dwellers). The scale of this off-site employment depends on flock size and farms normally hire from 2 to 8 labourers. Overall, about 14 to 20% of industrial farms hires 2 to 3 labourers, 6 to 7% hires 5 to 8 labourers, while the number of hired labourers for the largest farms is about 15 to 20 (Hong Hanh *et al.*, 2007; VGSO, 2004).

Since the majority of employment in these industrial farms still stems from family or neighbour sources, labour costs are not very different from those of other poultry production systems in Vietnam, although concentration of these facilities in peripheral urban areas may sometimes imply higher labour costs. Family member workers in large-scale operations are more likely to be engaged full time in poultry work, rather than dividing their attention between poultry and other farming activities. The main dividing line between 'workers' in these three systems described is thus not family or village affiliation, but probably education and training. Industrial systems may employ fewer workers per unit of output, but these workers acquire specific human capital by working with more advanced hard and soft technologies, thus increasing their future productivity, labour skills and earning capacity (Hong Hanh *et al.*, 2007; VGSO, 2004).

Conclusions: Poultry keeping is an integral part of rural households' livelihood strategies and has been so for thousands of years. Poultry meat and eggs are major sources of animal protein for the poor. Vietnam has established Millennium Development Goals for health, education and economic progress, amongst many others. Livestock, specifically poultry, aids in poverty alleviation, rural employment, increasing diet diversity and reducing gender inequalities, all of which target accomplishment of goals. Characterization of poultry production systems in SE Asia helps government and the public to better understand this agricultural sector and in doing so, they can coalesce with industry participants to derive the most benefits out of this activity.

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Disclaimer⁵

Mr. Sigfrido Burgos is an international consultant at FAO. Ideas and information presented herewith represent solely his personal opinions and views and are not necessarily endorsed by the international organization that currently employs him.

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