

OVERVIEW OF DAIRY PRODUCTION IN VIETNAM

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Dairy development in Vietnam

Dairy production in Vietnam had marked its first development landmark in 1962 by importation of 30 Holstein Friesian (HF) from China. Since 1970 to 1978, more than 1000 HF cows were imported from Cuba. In 1985, there were 5,800 dairy cows in the whole country. The dairy development had just really commenced from 1990 starting in Ho Chi Minh City with small scale farmer

production. With the view to meet the production demand, since 2001 to 2005, the Ministry of Agriculture and Rural Development (MARD) imported 192 HF and Jersey for nucleus stock development. At that time, some provinces and private farms also imported more than 10,000 HF and HF x Jersey from Australia, New Zealand and Thailand for milk production. In 2004, the dairy herd was threefold compared to 2000.

Table 1. Dairy herd and milk production

	1990	1995	2000	2002	2004	2006	2008
Total population(head)	11,000	18,700	35,000	55,848	95,794	113,215	107,983
In the North (head)				8,216	24,151	23,335	18,455
In the South (head)				47,632	71,643	89,880	89,528
Total milk production (tons/year)	12,000	17,000	51,400	78,400	151,300	215,940	262,160

Source: Livestock Department, 2007



After 2004, the population growth was slowed down due to the transformation from small to the large production scale, and the selection and culling of the herds. Dairy productivity and quality have been increasingly improved. In 2006, the total

dairy population in the country was 113,200 head with 15% of pure HF and the rest of different HF blood proportions; and with the milk production of 216,000 tons. In 2008, the total population decreased to 107,980 head but milk production increased to 262,160 tons with average milk production/lactation of more than 400 kg, near twofold compared to 1990. This figure is higher than China (3410 kg) and Thailand (3200 kg), but much lower than Taiwan (7160 kg). Milk yield was estimated to increase 100 kg/lactation

reaching to 4660 kg/lactation in 2015.

Before 1990, Vietnam had only a few state milk processing factories. Since 1990 to 2005, milk processing industries had been strongly equipped along with the investment

of foreign companies, namely Nestle; Dutch Lady; Nuti Food; Lothamilk; Vixumilk; F&N; Hanoimilk; Bình Định, with a total of 17 milk processing factories. In 2006-2007, there were more companies invested (Elovi, Quốc tế, Việt Mỹ, Milas, Nghệ An...) given to the figures of 22 milk processing plants in the whole country, in which, Vinamilk is the leading company with capacity of 1.2 billion L/year.

The total milk turnover in 2003 was US\$603 million, which reached to US\$980 million in 2007, with an average annual growth of 12.9%; in which, liquid milk obtained US\$684 million accounting for 69.75% of the total turnover. Milk production in the country actually meets only 22% of the consumption need.

Table 2. Import and export values of milk products during 2000-2008

	2000	2001	2002	2003	2004	2005	2007	2008
Export (US\$ million)	80.40	191.50	85.90	67.20	34.30	89.60	35.00	76.00
Import (US\$ million)	140.90	246.70	133.20	170.80	201.20	311.20	462.00	535.00
Rate (exp./imp.) (%)	57.06	77.62	64.49	39.34	17.05	28.79	7.57	14.20

Source: Livestock Department, 2006

Dairy research and its preliminary results

Đỗ Kim Tuyên *et al* (2004) reported that, under good nutrition condition of the pure HF herd in Mộc Châu farm, the new born weight was 33.7-34 kg, viability at weaning was 91-97% and weight at the first service was 336.2kg. The annual parturition rate was 80%, age of the first service was 18-20 months and of first calving was 27-30 months, calving interval was 14-15 months. Lactating cows/total herd was 80-81%, average milk production/lactation was 4,300-4,600 kg with fat content of 3.28-3.39%.

The research results of Nguyen Quoc Đạt *et al* (2000) on the selected HF herds in Ho Chi Minh City showed that: weight at adult age of crosses was 450-470 kg, age at first calving was 26.6-27.2 months, conception rate was 1.68-2.07 and calving interval was 441-461 days. Milk production/lactation was 3457-3858 kg.

Dinh Van Cai (2001) reporting on F1 and F2 HF keeping at Dairy Training Center showed

that: age at first service: 16.5 months, weight of first service: 277 kg, age of first calving 25.8 months, conception rate: 1.62 and calving interval: 388 days. Milk production/lactation was 3129 kg.

The research and production results have identified that HF is the first priority of use for improving the local cattle population, and followed by Jersey; other crosses are not recommended. Upgrading between HF x Lai Sind (crossed Sindhi) to produce 50% and

75% HF blood for milk purpose has been practiced in all zones of the country. Crosses of more than 7/8 HF and pure HF have been only recommended to keep at the farms with good feed and management conditions. Using crossed bulls of 3/4, 7/8 and higher HF blood with the view to fix or reduce HF blood in the next generations is not feasible in the production.

Research has focused on the formulation of diets for 50% and 75% HF crossed with body weight of 300-550 kg and milk yield of 5-25 kg/day basing on the NRC and AFRC and on the available local feedstuff resources (Cai Đ.V, 1995); on the feeding management for crossed calves of 3/4 and 7/8 HF during sucking period of 12 weeks with 280 kg fresh

milk + 85 kg concentrate feed of 18% CP (Ngan *et al*, 2008); and on the ration ingredients structure and nutrient components (ME, CP, concentrate feed/roughage ratio) for females from weaning to two months before calving (Cai Đ.V *et al*, 2008).

The research has also paid attention to feeding management in order to improve milk yield and quality, reduce mastitis, reproductive diseases on dairy cows (Cai Đ.V *et al*, 1998; Vu Đ.Đ *et al*, 2000; Dung *et al*, 2002...); to heat stress effect under hot and humid condition (Cai Đ.V *et al*, 2002; Vu *et al*, 2006).

Table 3. Feeding regimen for breeding female calve (sucking period 0-12 weeks)

Age (weeks)	Milk (times x kg)	Milk (kg/day)	Mixed feed (kg/day)	Green forages (kg/day)
0-4 days	Colostrum 2 x 1.5	3		
5-7 days	2 x 1.5	3		
2-3 weeks	2 x 2.0	4	0-0.2	
4-5 weeks	2 x 2.5	5	0.3-0.5	0-1.0
6-7 weeks	2 x 2.0	4	0.8-1.0	2.0-3.5
8-9 weeks	2 x 1.5	3	1.3-1.7	3.5-4.0
10-11 weeks	2 x 1.0	2	1.9-2.1	4.0-4.5
12 weeks	1 x 1.0	1	2.1-2.3	4.5
Total (1-12)		280	85.0	189

Source: Ngan H.T and Cai Đ.V, 2008

Table 4. Ration for female HF from weaning to the first service

Criteria	Unit	Age (month)			
		4-6	7-9	10-12	13-15
Final weight	kg	155	209	255	301
Daily gain to reach	g/day	650	600	500	500
Concentrate feed in the ration	%DM	53-54	42-43	34-35	29-30
Crude protein (minimum)	%DM	14.0	13.5	13	12.5-13.0
Energy density (ME)	Kcal/kgDM	2350	2350	2350	2350
Dry matter intake	kg/day	3.6-3.7	4.7-4.8	5.5-5.7	5.6-5.8
Energy intake (ME)	Mcal/day	8.4-8.5	10.5-11.0	12.0-13.0	14.0-15.0
Crude protein intake(CP)	G/day	510-520	660-670	700-720	730-750

Source: Cai D.V and Ngan H.T, 2009

Basing on the data from the Statistical Department, by regression method, the estimated milk production/lactation of dairy

cows in Vietnam was calculated and presented in Table 5.

Table 5: Estimated milk production/lactation of dairy cows in Vietnam.

Year	kg/Lactation	Year	kg/Lactation
1990	2190	2007	3840
1995	2620	2008	3945
2000	3130	2009	4050
2001	3230	2010	4150
2002	3330	2011	4250
2003	3430	2012	4350
2004	3540	2013	4450
2005	3640	2014	4560
2006	3740	2015	4660

Main research orientations in the next future

- Establishing and perfecting the dairy database systems to service the management, selection and evaluation of dairy stocks
- Research on the application of MOET technique provide that to shorten the genetic evaluation of bulls through sisters performance testing.
- Genetic evaluation of dairy should pay more interest to the genetic value of male and female than the crossing.
- Utilization of pure and crossed bulls born in Vietnam which have better adaptation to hot and humid condition for breeding program with the view to reduce gradually imported semen from temperate countries.
- Research on the diet formulation and feed management for HF with different blood proportions, especially for crosses of high HF proportion and pure one, in order to maintain body weight and milk yield, reduce reproductive diseases, mastitis, . . .
- Research on housing suitable to humid and hot climate, on hygiene & veterinary.
- Evaluation of milk production efficiency at different farm levels with different inputs in order to help farmers to improve their livestock production and lower the cost.

REFERENCES

- Ministry of Agriculture and Rural Development. Report on the status and development orientation of dairy in Vietnam period 2002-2010.
- Ministry of Agriculture and Rural Development, 2008. Livestock development strategy to the year 2020.
- Livestock Department, 2006: Report on the evaluation of dairy production 2001-2005 and development orientation to the year 2006-2010 and 2015.
- Livestock Department, 2007. Statistics of dairy cow herd and milk production
- Đinh Văn Cải, 2003. Production characteristics of 50% and 75% HF cows

kept at Dairy Training Center, Binh Duong province.

Đo Kim Tuyen, Bui Duy Minh, 2004. Some criteria of Holstein Friesian breed kept at Mộc Châu Dairy Cow Company

Hoàng Thị Ngân, Đinh Văn Cải, 2008. Research on feeding management of crossed female calves for breeding stock.

The National Dairy Development Meeting on 01 January 2002 in Ho Chi Minh city.

IFCN, 2008: Dairy Report 2008.

Nguyen Quoc Đạt, Vu Van Noi, Bui The Duc, Nguyen Thanh Binh, 2000. Production performance of crossed HF under farm condition surrounding Ho Chi Minh city. Final report of national research subject KHCN-08-05.