

Livestock Development in Indonesia

By

Yuhara SUKRA

東京農業大学総合研究所紀要 第4号(平成5年)別刷

Bulletin of NODAI Research Institute Tokyo University of Agriculture

Setagaya, Tokyo 156, JAPAN

Livestock Development in Indonesia

By

Yuhara SUKRA*

(Received March 10, 1993)

Introduction

Indonesia, a tropical country in South East Asia which has 13,677 islands, is inhabited by 185 millions people, who could not get rid of consuming food of animal origin, in a knowledge revolution which indicates the that metabolism of knowledge is moving faster. The condition might change in the future if Rabeiz, Professor of Plant Physiology, University of Illinois, Urbana could produce food without plants, fields, tractors, as well as farmers by constructing photosynthetic membrane reactor. This reactor will be able to transform carbon dioxide, water, and energy of the sun into glycerol, the building stone of organic matter.

At present, Indonesia is named developing country, where about 70-80% of the people live in rural areas. Therefore, when we mentioned about the condition of farmers in Indonesia, it will remind you to the condition like your country in the past decades, as Japan has become a developed country, long time ago.

1. Animal Science Education in Indonesia

Higher Education System. Higher education consists of both public and private higher education institutions, as a unified system. Higher education system has five types institutions : Academy, Polytechnique, School, Institute, and University.

Academy and Polytechnique offer D1, D2, and D3 or one, two and three years education programs, respectively, leading to professional stream. School, Institute, University offer academic stream, leading to academic degrees (undergraduate degree (Sarjana) and post graduates, such as MS and PhD). These institutions may also offer education programs leading to professional stream, like that in the Academy or Polytechnique.

There are 49 public higher institutions, and on top of and within these institutions there are 26 polytechniques. Private higher education has 1027 tertiary institutions. The student body at the public and private, amounted around 700,000 and 1.3 millions, respectively. In the last 15 years, the student body of the public is ahead of the private. In the last 10 years ago the student body became the same, and in the five years now, is changing where the student body in the public is behind than that of the private.

Undergraduate Study. At tertiary education, animal science is offered at the Faculty of Veterinary Medicine and Animal Husbandry, but since 1963 the Faculty has been changed to become two Faculties, the Faculty of Veterinary Medicine, and the Faculty of Animal

(Record of the lecture at NRI, TUA, on March 10, 1993)

* Prof. Dr. Bogor Agricultural University, Bogor, Indonesia, Guest Prof. of Tokyo University of Agriculture

Husbandry. In some institutions, however, the Faculty of Agriculture may offer courses related to animal science.

At present, there are 14 Faculty of Animal Husbandry at the public universities, and 5 Faculty of Veterinary Medicine. The private HEI has 4 Academies, 2 Schools, and 17 Faculties within the Universities. The total student body at both public and private HEI, approximately 15,000 students, or about 1% of the national student body. The trend indicated that the student body declined in the last few years. The Faculty of Animal Husbandry is also offer a three year education programme, leading to professional stream, majoring in : (1) Meat Type Husbandry, (2) Poultry Husbandry, (3) Dairy Husbandry, and (4) Agriculture Rural Communication.

Post Graduate Study. Bogor Agricultural University (IPB at Bogor), Padjadjaran University (UNPAD at Bandung), Gadjah Mada University (UGM at Yogyakarta) have been designated advance degree granting institutions to offer animal science, as well as in veterinary science, but UNPAD.

The graduate students are mainly faculty members from other universities in the country, aims at improving quality in teaching and research, which ultimately improve the undergraduate education at their home universities. Staff from the Research Institutions of the Ministry of Agriculture, the Ministry of Forestry and other related agencies are the second major input of students to the advance degree granting institutions, as mentioned, aims at improving their research capabilities.

2. Role and Production of Livestock

As mentioned before, about 70-80% of people live in the rural areas. Most people in these areas are small farmers and each family keeps about 2-4 heads of beef cattle/buffaloes/sheep/goat/pigs in limited owned land. They raise livestock in traditional manners.

Improving livestock production by the Government of Indonesia is to cope with quantity and quality by providing tangible as well as intangible inputs, such introducing artificial insemination, distribution of breeding animals, improving of feed, treatment and prevention of diseases.

Data to show : Land ownership by traditional farmers, number of traditional farmer by

Table 1. Student Enrollment at the Bogor Agriculturally Related Faculties

Faculty	Academic year	
	1987/1988	1988/1989
Agriculture	644	608
Vetrinary medicine	48	34
Fishery	307	308
Animal husbandry	33	29
Forestry	97	75
Agriculture engineering	426	363
Mathematics and natural sciences	112	93

number of livestock, livestock population, contribution of livestock to the GNP, global trend of meat consumption, meat, eggs, and milk consumption, export and import of livestock commodity, are shown in the following Tables.

Table 2. Land Ownership by Traditional Farmers (1983) (000 families)

Less than 0.05 ha	1,271
0.05-0.09 ha	1,167.5
0.10-0.24 ha	3,155.9
0.25-0.49 ha	3,943.3
0.50	9,977.7
Total	19,515.4

Table 3. Number of Traditional Farmers by Number of Livestock

11,489,884	Chicken (indigenous)
64,663	Dairy cattle
4,053,417	Beef cattle
934,476	Buffaloes
4,735,794	Goat/Sheep
1,389,600	Pigs
302,934	Horses

Table 4. Livestock Population (000 head)

Livestock	1983	1984	1985	1986	1987
Pig	4,247.9	5,288.7	5,700.4	5,917.7	6,214.9
Dairy cattle	197.5	183.6	175.6	203.2	225.4
Beef cattle	8,893.9	8,745.5	9,111.0	9,432.9	9,616.2
Buffaloes	2,397.5	3,118.5	3,245.5	3,311.9	3,287.6
Goat	10,969.6	9,204.7	9,599.0	9,956.0	10,170.1
Sheep	4,789.4	4,855.0	4,855.4	5,010.0	5,208.8
Horse		659.0	668.0	715.0	667.0
Chicken		166,815	156,627	162,991	172,392
Layer		29,559	31,875	38,689	46,353
Broiler		110,580	143,657	173,795	216,478
Duck		24,694	23,870	27,002	26,032

On top of these animals; snails, frog, snake, eels, bird nest, as well as primate are becoming economically important, not only for domestic consumption but also for export.

Table 5. Contribution of the Livestock to the GNP

Description	1983	1984	1985	1986
National (billion Rp)	73,697.6	78,144.4	79,910.8	82,474.5
Agriculture (billion Rp)	17,696.2	18,431.1	19,209.0	19,687.0
Livestock (billion)	1,754.3	1,890.1	2,036.5	2,097.0
Livestock to agriculture (%)	9.91	10.25	10.60	10.65
Livestock to national (%)	2.38	2.42	2.55	2.54

Table 6. Global Trend of Meat Consumption
kg/capita/year (FAO)

Source	Country	
	Developed	Developing
Beef cattle	26.8	4.0
Goat/Sheep	2.8	1.4
Pork	29.8	5.7
Poultry	17.3	2.7
Total	76.7	13.9

Table 7. Meat, Eggs and Milk Consumption 1984-1987

Description	1984	1985	1986	1987
National (000 tons)				
Meat	744.4	809.5	880.5	927.9
Eggs	295.7	307.4	362.4	415.9
Milk	622.8	541.7	571.9	591.9
Consumption/capita/yr				
Meat	4.6	5.0	5.4	5.4
Eggs	1.8	1.9	2.1	10.0
Milk	4.0	3.3	3.4	3.4
Protein consumption/capita/day (gram)				
Meat	1.6	1.6	1.7	1.8
Eggs	0.6	0.6	0.7	0.7
Milk	0.3	0.3	0.3	0.3
Total	2.5	2.5	2.7	2.8
Sources : Beef cattle	28.9%			
Buffalo	5.5%			
Goat	5.7%			
Sheep	3.4%			
Pig	16.6%			
Poultry	41.6%			

Table 8. Export and Import of Livestock Commodity (in 000 US\$)

	1984	1985	1986	1987
Export	36,692.4	35,800.0	40,211.0	41,620.0
Import	74,443.2	70,253.6	60,507.5	55,028.6
Balance	-37,750.8	-34,453.6	-20,296.5	-13,408.6

3. Livestock Development

Livestock development aimed at improving production to cope with increasing needs of food of animal origin and for the welfare of people.

Intensification, extensification, diversification, and rehabilitation, are among the major policies of the Government of Indonesia in enhancing livestock development. Intensification is supported by introduction technology, such as artificial insemination, introduction of new blood. Extensification and diversification are implemented not only to improve the existing livestock in some regions but also to establish the new regions for livestock production in the rarely populated as well as at the transmigration target areas in the outer islands.

There are three target groups who contribute directly to livestock development: (1) Family as traditional farmers in rural areas, (2) Nuclear Estate farmers, and (3) Private as well as semi-private enterprises. Livestock development in the rural areas is taken into attention to improve their present status and to step-wise participate and to function as farmers plasm. Nuclear estates are organized farmers who play role not only in production and marketing but also collect livestock from the surrounding traditional farmers. Private and semi-private commercial firms are promoted to enable them play role as large scale of livestock production and may play role as surrogate parent to smaller livestock producers.

The livestock commodity of economic important is shown in Table 9.

Infectious diseases and diseases transmitted from animal to man or zoonosis of major importance, and closely related to animal health as follows;

1. *Rabies*: The main vectors of Rabies to date are dogs, cats, monkeys. The Rabies is found in any part of Indonesia, but in Bali Island.
2. *Anthrax*: The incidence of Anthrax in man is mostly in relation to outbreak of anthrax in animals.
3. *Cysticercosis*: The disease is found in Java, Bali, West Lombok, West Irian, and East Java and Madura, as well as in Jakarta. Taeniasis in Bali and Lombok were due primarily to consuming of dishes called lawar which contains uncooked meat. Infection of cattle, buffaloes, and pigs are caused by poor hygienic conditions with unsanitary fecal disposal.
4. *Salmonellosis*:
5. *Leptospirosis*: Leptospirosis remains widespread in wild animals in Indonesia. The role of rats as a source of human infection were reported in Central Java, Jakarta, Surabaya, Ujung Pandang, South Sumatra, and in Bangka Island.
6. *Trichinosis*: Trichinosis was reported in Batak pigs. The larvae were also found in dogs, rats, and cats in Tapanuli. Cases in other parts of Indonesia have never been reported.

Table 9. Livestock in Indonesia

Beef Cattle	
Bali Cattle	: Domesticated Banteng (<i>Bos indaicus</i>)
Zebu Cattle	: Indian origin, purely breed in Sumba Island
Madura Cattle	: Crossbred between Bali and Java Cattle
Buffalo	: Roan colour buffaloes in Toraja
	: Water buffalo in Kalimantan
Anoa	: In South Sulawesi
Dairy Cattle	
Frishian Holstein	: Import origin
Pasuruan FH	: Dual purpose : dairy and working cattle
Others	: Imported origin
Goat	
Kacang Goat	: Indonesian origin (meat type)
Ettawah	: Indian origin (milking goat)
Sheep	
Priangan Sheep	: Crossbred : Merino × Local (popular in West Java for fighting entertainment)
Fat Tail Sheep	: In East Java (good to sit)
Hornless Sheep	: Not quite popular
Pig	
Bali Pig	: Back, black and white
Wild Pig	: Good for hunting
Imported Pigs	: Bacon type as well as lard type
Horse	
Sumba Horse	: Sumba Island
Manado Horse	: Manado, North Sulawesi
Priangan Horse	: Bandung, West Java
Chicken	
Kampung Chicken	: Kedu Chicken, Central Java, Pelung Chicken, West Java
Layers	: Import origin
Broiler	: ditto
Duck	: Central Java, Bali, West Java, Kalimantan
Primate	
Wild Monkeys	: In Sumatra, Kalimantan, Sulawesi, Java, Bali
Orang Utan	: Kalimantan, Sumatra

7. *Brucellosis* : Brucellosis in cattle and pigs was found especially in East Java, and in goat was reported in West Java.
8. *Tuberculosis* : The dominant type isolated from individuals and animals at autopsy is the human type. Contact or alimentary infection with bovine *Tuberculosis* is rare, as milk is usually well cooked before being consumed.

9. *Tetani and Food-borne disease : botulism* : Horse, sheep, goat are among susceptible animals, as compared to cattle, dog, and cat. Food poisoning due to *Clostridium botulism*.
10. *Water-borne disease* : Shistosomiasis was reported in Central Sulawesi. Man is infected through eggs go along with faeces, miracidium, snail, cercaria, and infect human being.
11. *Milk-borne disease* : Due to *Bacillus tuberculosis*, *Streptococci*, *Staphylococci*, *Salmonella*, *Brucella*.
12. *Pesticides, carbon monoxide, plant toxin (cassava containing cyanide), mycotoxin* : fungi producing aflatoxin

4. Challenges in Livestock Production and Development

Indonesia has to work harder and to learn a lot, if self supporting of animal protein which ultimately to welfare the people is to be achieved, as :

1. The rural farmers are generally tend to keep their habit tradition, less educated, owned land and livestock are very limited.
2. Reproductive performance of the livestock is low, due to some factors, such as feed and nutrition, genetics, diseases, traditional practices, capital, marketing.
3. Lands for extensification in the outer islands are available, but there are many places still unuse.
4. Human resources, technology, investment, overseas support are considered constrain, unless livestock industry is coming into existence, like poultry, beef cattle, and pig production, as well as facilities for diseases control and prevention, for domestic use and export.
5. Increasing demand of livestock products tends to create competition between the in country and the imported products.

To face the future we have to integrate our ideas, intelligence, and information on livestock production and development resulted in achieving a value added of livestock. Comprehensive biological information by way of engineering and manipulation to wide areas of discipline such as genetics, sex cells and embryo, feed and nutrition, diseases diagnosis and control is essential. These value added information will be initiated with intangible intellectual products, and to a high degree of responsibility will fall to scholars in higher learning institutions, and other related agencies like entrepreneurs, industries, and its environment. The cooperation that has been developed since mid seventy between the Japan Society for Promotion of Sciences and the Direktorat General of Higher Education, Ministry of Education and Culture has contributed a lot in enhancing exchange scholars. The experienced gained has enable me to introduce embryo transfer technology in the learning process.

Last but not least, it is assumed that what I mention intangible intellectual products as the frontier of knowledge is in line with what Marcel Proust, cited by Osborne and Gaebler, who said that the real voyage of discovery consists not in seeking new lands, but in seeing with new eyes.

References

- FAO, 1989. Biotechnology for Livestock Production. Plenum Press, N.Y. and London.
Naisbitt and the Naisbitt Group, 1986. The Years Ahead 1987. Futura Publ., London.

-
- Osborne, D. and Gaebler, T., 1992. *Reinventing Government*. Addison-Wesley Inc., Reading, Massachusetts, Calif., N.Y., LSI.
- Sawarni, Soejoedono, R.R., dan Sanajaya, A.W., 1989. *Pedoman Mata Ajaran Kesehatan Masyarakat Veteriner II*. Fakultas Kedokteran Hewan, IPB, Bogor, Indonesia.
- Sistem Pendidikan dan Industri Peternakan dalam Era Pembangunan Nasional Lepas Landas, 1988. *Proceeding Seminar*. Fakultas Peternakan, IPB, Bogor, Indonesia.
- Toffler, A., 1991. *Power Shift. Knowledge, Wealth, and Violence at the Edge of the 21 th Century*, Bantam Books, N.Y., Toronto, London.