

MENTERI MUDA PERTANIAN REPUBLIK INDONESIA

VETERINARY SCIENCE AND THE ROLE OF INDONESIAN VETERINARIAN IN NATIONAL DEVELOPMENT

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ABSTRACT

The available of livestock has had profound influences on the growth of civilization. Systematic animal breeding, increasing control over animal diseases, advanced study on nutrition, improvement in food processing, storage and transportation have been great advantages in livestock raising and the use of animal products. In the world as a whole the need for food has grown faster than the supply of domestic animals. This is a challenge for the veterinary profession.

Veterinary science is the science dealing with the prevention control and treatment of domestic animal diseases. There are 5 Faculties of Veterinary Medicine in Indonesia. The number of Indonesian veterinarian is now about 2,000.

In dealing with the improvement of livestock production, veterinarians are working closely together with the animal husbandry graduates, a profession produced by the "*Faculty of Animal Husbandry*" since the late sixties.

The role of the Indonesia veterinarian in the national development is not limited on regulation and extension function but also on development function. It is meant that almost all Indonesian veterinarians are involved in planning, organizing, actuating and controlling process in the national development, especially in livestock development and public health.

One of the successful roles of the Indonesian veterinarian in the national development was to carry out the systematic Foot and Mouth Disease eradication programs so that all parts of Indonesia are now free from the disease. Another successful story of the role of the Indonesian veterinarian in national development is the successful implementation of the whole net-work of artificial breeding in Indonesia, including the efforts to cope with the problems of infertility and reproductive disorder in cattle.

I. INTRODUCTION

Animal are said to be domesticated when they are kept under human control

and also regularly bred in captivity. Animals have been domesticated for a number of reasons: *as hunter or pets* (dogs and cats), *for ornament* (swans and

peacocks), *for sports* (horses, bulls, and gamecocks) and for *religious reasons* (cats, in Egypt).

The primary motive in domesticating animals, however, has been to have them available *as a source of food*, skins, or other products, or *to do work*. Animal domestication has thus been a major factor in the development of farming. Both animal and plant domestication began relatively late in man's existence. Man was associated with animals - as hunter - for many thousands of years before he began to keep and breed the animals.

The dog, probably the first domesticated animal because it seem to have attached itself voluntarily to man. Perhaps it was attracted to the hunting camps of early man by refuse and was tolerated as scavenger and sentinel. Sheep and goats were the next animals to be domesticated in southwestern Asia. The initial motive in domesticating sheep and goats was to have a source of meat when game was scarce. Wool production had not yet developed in sheep, and goats were presumably not yet regularly milked.

Next to be domesticated were bovines. Cattle were derived from very widespread Eurasian and North African wild bovines, with which they were later frequently recrossed to yield new breeds. The advent of cattle herding added a new dimension to animal husbandry. Kept in large numbers, cattle could provide the entire subsistence for human community. The invention of plow probably coincided with the discovery that the castration of bulls produced a more docile work animal. The spread of plowing and the idea of using animals to save human labor,

combined with the invention of the wheel, initiated a chain of inventions.

After cattle, the next major animal to be domesticated on a large scale was the pig. Pigs do not congregate in large herds and far less mobile than sheep, goats, or cattle, thus they fit well into sedentary village economics. Like dogs, pigs could have been self-domesticated, attracted by opportunities scavenging.

Asses or donkeys were firstly domesticated in the Nile valley from the wild Nubian ass. This animal later spread to most of the Mediterranean Basin, across southwestern Asia, and into North China, mainly as a pack animal. Horses were domesticated by the people of Ukraine or Caucasus. As work animals, horses were limited by the fact that their necks could not carry the heavy yokes used for cattle. The Chinese invented the horse collar around and this device made it possible to use horses for plowing and for hauling carts. The use of horse collar spread slowly to the west.

Ducks and geese were domesticaled fairly early, probably in several places independently. Chickens are of more restricted origin, coming from southeast Asia. They reached Europe and Africa only in Roman times. Southeast Asians kept chickens for their eggs or meat, and for cockfighting, religious offerings, and as handy alarm clocks.

The availability of livestock has had profound influences on the growth of civilization. For example, the way of life called pastoral nomadism is built around flocks and herds. In this economic system, livestock are the basis of subsistence, and

agriculture is marginal. Animals have also been connected with religious beliefs and practices from prehistoric times. Particularly among peoples who live by hunting or by raising flocks and herds, animals have had major roles in religious as well as economic and social life. At the same time, there have been great advances in livestock raising and the use of animal breeding, increasing control over animal diseases, advances in the study of animal nutrition, and improvements in food processing, storage, and transport.

Animal husbandry in the developed countries has been transformed from a local and rather primitive system of production for subsistence to an increasingly complex economy. In the world as a whole, the need for food has grown faster than the supply of domesticated animals. This is a challenge for veterinarians to cope with that problem.

II. VETERINARY SCIENCE AND THE ROLE OF VETERINARIANS

Veterinary science or veterinary medicine is the science dealing with the prevention and treatment of diseases of domestic animals. One who practices this science is a veterinarian, a name derived from the latin *veterinarius*, meaning of or pertaining to beasts of burden and draft.

The origin of veterinary medicine is inseparable from that of human knowledge. The pathology of animal diseases was considered useful information by Hippocrates, the father of medicine. The earliest veterinary schools were founded in France, the first in 1761

in Lyon and the second in 1766 at Alfort. After more than 220 years of the first school of veterinary medicine, most of the well-developed countries of the world have had veterinary school for many years, and the education given to their veterinarians is of comparable quality in many instances. By 1986, the number of veterinarians throughout the world had reached about 250,000 while there were approximately 200 worldwide veterinary schools.

By 1970, there were 3 Faculties of veterinary Medicine in Indonesia. The first veterinary school in Indonesia was founded in Bogor during the Dutch occupation (1906), the second one was founded in Yogyakarta during the physical revolution (1948) and the last was founded in Surabaya during the era of National development (1970). Beside the 3 faculties of veterinary medicine in Bogor, Yogyakarta and Surabaya, there are two other faculties which have veterinary medicine division, one in Banda Aceh and another one in Bali. The Veterinary course in Indonesia comprises of five years of minimum of nine months each. Courses in anatomy, biochemistry, physiology, pathology, parasitology, microbiology, clinical diagnosis, medicine, and surgery are the backbone of veterinary medical education in Indonesia. The protection of the health of the public is an integral part of all aspect of veterinary medicine. The inspection of meat products, the recognition and eradication of communicable diseases, research in diseases causing great economic losses, and vaccination of individual animals are all services of veterinarians to safeguard the public health.

In the protection of public health from the menace of diseases of animals communicable to man, the practicing veterinarian occupies the first line of defense. His vaccination and immunization programs prevent uncounted cases of communicable diseases. The diagnosis of these diseases which may spread from animals to man and subsequent arrest of this spread depend on the veterinarians. The arrest of infectious diseases before they assume epidemic proportions is usually done in cooperation with government veterinarians. Three of these serious communicable diseases are tuberculosis, brucellosis, and rabies.

In addition, the veterinarian has also an important role in providing food from animal origin through increasing livestock production. This professional ability is not only for serving the farming system, but also the upstream activities e.g. import and supplies of feed, medicine, breeding stock production, as well as down-stream activities e.g. processing and marketing.

III. THE ROLE OF INDONESIAN VETERINARIANS IN THE NATIONAL DEVELOPMENT

The Directorate General of Livestock Services, like the government veterinary authorities in many countries, is concerned with the regulation of animal diseases which may sap the national health and economy, and with controlling animal products utilized for food by the general public. In Indonesia the eradication programs against infectious animal diseases are under the direction of and largely carried out by authorized

veterinarians in the Veterinary Services of the Ministry of Agriculture. This organization is also responsible for the inspection of dairy and meat products. This inspection includes the ant- and post-mortem examination of animal for evidence of diseases as well as the maintenance of sanitary environment and processing. Research in animal diseases by government veterinarians is carried out at modern laboratory in Bogor. Investigation Centers i.e. Medan, Bukittinggi, Bandarlampung, Banjarbaru, Yogyakarta, Maros, and Denpasar. In each provide there are B and C Animal Health Laboratories dealing with diagnosis and surveillance.

Veterinary Services are still important in the military field. The Military Forces of The Republic of Indonesia maintains veterinary corps in its medical departments, composed of graduate veterinarians as officers. The mission of these corps are : (1) to safeguard the health of troops by inspection of all foods of animal origin procured for consumption by military personnel; and (2) to provide professional veterinary medical services for animal owned by the military services. The possibility of biological and radiological warfare has added new responsibilities to both military and civilian veterinarians.

The preservation of food by means of irradiation and study of chickens, dogs, rats, and other laboratory animals feeding as the test animal using feed preserved by irradiation requires the professional guidance and interpretation of the veterinarian.

The practice of veterinary medicine in

Indonesia varies according to locality, animal population, special skills and interests of the Indonesian veterinarian. The health of cattle, buffaloes, horses, sheep, goats, swines and chickens, is the concern of rural veterinary practitioners, frequently called as a large-animal practitioners. The small-animal practitioners deals with dogs, cats, and cage birds is frequently located in or near an urban population. Many veterinarians have mixed practices and some treat only horses. Prevention of diseases constitutes a large and important portion of many veterinarian's efforts. Advice on nutrition, sanitation, breeding, and other husbandry practices is valuable, as is the vaccination of animals against many infectious diseases.

Diseases of zoo animals are of interest to a small group of Indonesians veterinarians. Most of zoological gardens and oceanariums in Indonesia employ veterinarians. Prevention of diseases is an important factor in maintaining a healthy zoo collection.

Quarantine is essential to prevent the introduction of infectious diseases into the country. Animal Quarantine Services in Indonesia is under the direction of the Agricultural Quarantine Center Agency of the Ministry of Agriculture. Veterinarians who are employed in this organization, are responsible for preventing the introduction of infectious diseases coming both from abroad or other island or part of Indonesia. By providing a veterinary supervision of quarantine such procedures as vaccination and deworming can be carried out.

The diagnosis of animal diseases is facilitated by many laboratory techniques and mechanical aids, but it remains the task of veterinarians to evaluate all the findings and make the decision. The infectious diseases of animals which the veterinarian is expected to recognize and treat comprise a long list. Each species of livestock and pet is subject to its own special group. Among the animal diseases Foot and Mouth Disease (FMD), hemorrhagic septicaemia, and brucellosis are the most important diseases in livestock; and Newcastle disease in chickens.

The government of Indonesia has a strong will to eradicate those infectious diseases as soon as possible. Under the Agricultural Technical Assistance (ATA) Project, the government of Indonesia initiated the eradication of Foot and Mouth disease, in Bali in 1974, and then continued in Java and South Sulawesi in 1975. The programs which had been assisted by the Australian Government through mass vaccination campaign and continued by accurate surveillance was almost completed in 1982, but another FMD outbreak occurred in Java in June 1983. A massive eradication program which consisted of stamping out methods, spraying and mass vaccination campaign followed by surveillance could stop the outbreak within 6 months. A mass vaccination program in Java was continued in 1984 and 1985 and all parts of Indonesia are now free from Foot and Mouth Disease. It was one of the successful roles of Indonesian veterinarians in our national development. This year (1988) the Directorate General of Livestock

Services is going to eradicate some other infectious diseases which developed an epidemic in some regions such as brucellosis, anthrax, hemorrhagic septicaemia, and rabies. It is hoped that the Indonesian veterinarians could repeat their success on disease eradication programs again.

Another disease problem arise in the development of animal husbandry is reproductive problems. The services of veterinarians specializing in the field of reproductive disorders include breeding advice, treatment of sterility, artificial insemination, pregnancy diagnosis, assisting the animal in difficult delivery, and post natal care.

The cause of sterility or difficult conception in animals are numerous. In animals of economic importance sterility reduces the values of the individual animal to the market value of its meat for food. Sterility is not a complete lack of reproducing ability, but frequently only temporary or partial failure, and in correcting the condition the veterinarian renders a valuable services. Diagnosis of the cause of sterility is highly technical and requires evaluation of the anatomy, hormone balance, sterility-producing disease agents, and general condition of the animal. The use of the appropriate techniques and drugs may often result in conception and successful completion of pregnancy. The infectious diseases e.g. brucellosis, trichomoniasis, and viral equine abortion, are responsible for economic losses through interference with reproduction. Abortion or failure to conceive may result also from numerous diseases not primarily of the reproductive system, but which disturb the health of the animal seriously.

The techniques of artificial insemination have been greatly improved, allowing more general and successful use. Indonesia has now produced a good quality of frozen semen in a modern laboratory for producing frozen semen, especially for cattle and buffaloes, in Lembang Artificial Insemination Center in West Java and Singosari Artificial Insemination Center was build in 1972 under the direction and technical assistance of New Zealand experts in Lembang West Java. The second one was established in Singosari East Java under the technical assistance of Belgian experts in 1982 and this center is now strengthenid under the technical assistance of Japanese experts. The successful implementation of the A.I Centers and the whole network of artificial breeding in Indonesia, including the effort to cope with the reproductive disorder problems, are another successful story of the role of Indonesian veterinarians in our national development.

Since the early sixties, the government has realized that livestock sector was too large to be handled by the veterinarian alone. So several faculties of animal husbandry were established. Animal husbandry graduates are dealing with breeding, feeding and management problem excluding animal health. The Animal husbandry graduates are working together closely with the veterinarians in dealing with improvement of livestock production within the last 2 decades.

In the last five years the Indonesia economy has not released yet from the tail impact of world recession. During this period (1983-1987) the Indonesian economy increased only 3.7 percent per

annum. It was very low if it is compared to the Indonesian economic growth in (1970-1980), i.e. 7.8 percent per annum.

But fortunately, the agricultural sector had increased 4.1 percent per annum during that period, and even in 1984 Indonesia could achieve the first self-sufficiency of staple food, especially rice (Table 1). During the same period the livestock sector showed a tremendous increase both on livestock population as well as production. All the targets projected in the 4th five year development plan was achieved, except on dairy and native chickens (Table 2 and 3). It is indeed due to high dedication of all staffs, professionalism among scientist and experts, and the development spirit of all Indonesia peoples.

To maintain the development results, especially in the livestock sector, the government is going to establish some (probably 200 unit) animal health services units (POSKESWAN) and release a ne

regulation to stimulate and improve the practice of private or semi private veterinary practitioners both in rural and urban areas.

The role of Indonesian veterinarians in national development is not limited as regulators or as veterinary extension specialists, or as practitioners, but also as agents of development, who take part in development actively. It is meant that all Indonesian veterinarians will be involved in planning, organizing, actuating, and controlling process of national development, especially in livestock development and public health.

The motto of the Indonesian Veterinary Association : "*manusya Mriga Satwa Sewaka*" (Servicing people through animal kingdom) is indeed not an empty phylocophy but is a reality. Large and prospering activities with experienced, reputable, and competent veterinarians in national development are absolutely

Table 1 : Rice Production target and realization in the last four years of the 4th FIVE YEAR DEVELOPMENT PLAN (REPELITA)

No.	Commodity	1984	1985	1986	1987 [*]
1.	Grooping area (000 ha)				
	- Target	9,132	9,166	9,120	8,962
	- Realization	9,764	9,902	9,988	9,908
	- Percentage (%)	106.9	108.0	109.5	110.5
2.	Production (000 tons)				
	- Target	24,638	25,494	26,181	26,570
	- Realization	25,933	26,542	27,014	27,453
	- Percentage (%)	105.2	104.1	103.2	103.3

needed. The above mentioned roles of the Indonesian veterinarian is not so different than the ones in the Asia Pacific region. They are serving through their professional veterinary science to their community for the national development.

The sixth Congress of the Federation of Asian Veterinary Associations will be an opportunity for Indonesian veterinarians to improve their knowledge of veterinary medicine and also an opportunity for all veterinarians of

FAVA member countries to contact each other and exchange their experiences. It is hoped that the Congress will promote brotherhood among veterinarians of FAVA member countries, closer relationship and better understanding and last but not least strong solidarity in all aspects of veterinary profession.

Finally I would like to take this opportunity of wishing all participants of the Sixth Congress of FAVA good luck and a successful Congress.

Table 2 : Meat, egg, and Milk Production Target and Realization in Last Four Years of the 4th FIVE YEAR DEVELOPMENT PLAN (REPELITA)

No.	Commodity	1984	1985	1986	1987
1.	Meat (000 tons)				
	- Target	704.1	753.4	797.6	911.0
	- Realization	742.2	808.4	879.0	926.9
	- Percentage (%)	105.4	107.3	110.2	101.7
2.	Egg (000 tons)				
	- Target	325.1	346.5	369.3	461.0
	- Realization	355.3	373.2	437.2	494.6
	- Percentage (%)	109.2	107.7	118.4	107.3
3.	Milk (000 tons)				
	- Target	170.3	229.4	257.7	286.4
	- Realization	178.5	191.9	204.8	227.2
	- Percentage (%)	104.8	83.7	79.5	79.3

Table 3: Livestock and Poultry Population Target and Realization in the Last four years of the 4th FIVE YEAR DEVELOPMENT PLAN (REPELITA) (000 heads)

No.	Commodity	1984	1985	1986	1987
1.	Beef Cattle				
	- Target	6.751	6.831	6.912	6.994
	- Realization	8.745	9.111	9.433	9.733
	- Percentage (%)	129.5	133.4	136.5	137.5
2.	Dairy Cattle				
	- Target	169	208	254	293
	- Realization	184	176	203	225
	- Percentage (%)	108.9	84.6	79.9	76.8
3.	Buffaloes				
	- Target	2.533	2.559	2.585	2.612
	- Realization	3.119	3.245	3.331	3.287
	- Percentage (%)	123.1	126.8	128.1	125.8
4.	Goats				
	- Target	8.098	8.341	8.591	8.849
	- Realization	9.025	9.599	9.956	10.170
	- Percentage (%)	111.4	115.1	115.9	114.9
5.	Sheep				
	- Target	4.343	4.473	4.635	4.746
	- Realization	4.732	4.885	5.010	5.209
	- Percentage (%)	108.9	109.2	108.7	109.8
6.	Pigs				
	- Target	4.079	4.348	4.635	4.941
	- Realization	5.289	5.700	5.918	5.125
	- Percentage (%)	129.7	131.1	127.7	123.9
7.	Horses				
	- Target	704	711	718	725
	- Realization	662	669	707	692
	- Percentage (%)	94.0	94.1	98.5	95.4
8.	Native Chickens				
	- Target	154.703	162.747	171.210	180.113
	- Realization	166.815	155.629	165.576	162.991
	- Percentage (%)	107.8	98.3	96.7	90.5
9.	Layers				
	- Target	30.181	32.324	34.619	37.077
	- Realization	29.559	31.785	38.789	38.668
	- Percentage (%)	97.8	98.3	111.8	104.3
10.	Broilers				
	- Target	110.402	121.442	133.563	146.947
	- Realization	110.580	143.657	173.795	218.478
	- Percentage (%)	100.2	118.3	130.1	148.7
11.	Ducks				
	- Target	27.014	28.743	30.582	32.539
	- Realization	24.694	23.870	25.009	27.002
	- Percentage (%)	91.4	83.0	81.8	83.0

