

2. ANIMAL PRODUCTION AND ITS PROBLEMS IN INDONESIA

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Introduction

The first Five-Year Plan for Economic Development of Indonesia for the period 1969-1974 concentrates in the agricultural field and aims mainly at an increase in rice production.

However, general recognition of the need for developing animal production as a means of increasing protein consumption is indicated.

Livestock production is the responsibility of the Directorate General for Animal Husbandry in the Ministry of Agriculture. Research in livestock production is carried out principally by the Animal Husbandry Research Institute at Bogor, West Java, as a subordinate of the Directorate General for Animal Husbandry.

This Institute was established in 1952 and has two Regional Experiment Station in Central Java and in East Java. The research programme includes investigations in poultry husbandry, beef production, dairy production, livestock nutrition, tropical pasture and forage production and economic studies of livestock production.

Animal Production and its Problems in Indonesia

Indonesian breeds of livestock.

There are three distinct indigneous breeds of cattle in Indonesia: the Ongole (*Bos indicus*), the Bali cattle (*Bos sondaicus*) and the Madura cattle. The statistics of livestock population for the year 1971 is compiled in Table 1.

The Ongole was originally imported from India. It is purebred on the Sumba island and the number amounts to approximately 30,000 heads. This breed is used for upgrading local stock on Java and Sumatra. The pure bred and upgrade Ongole account for more than 80% of the total stock in this country.

The Bali cattle are uniform in type. It is the domesticated form of the *B. sondaicus*, the Banteng. The wild banteng still exists in the Game Reserve of West Java. The approximate number of the Bali in 1972 was estimated at 850,000 heads, that is some 15% of the total cattle population. This breed is held mainly on the island Bali, South Sulawesi, Lombok and Timor. The introduction of other breeds and cross-breeding is prohibited in Bali.

The coat colour for females and young bulls is redishbrown, except for a clearly defined white area on the behind that extends along the belly; the socks are white. Males at maturity are dark brown to black in colour. When castrated this colour turns red except for males that are born with black coat. The Bali cattle possess a raised dorsal ridge. The females weigh about 300 kg mature and the males 400 kg.

The Madura cattle are said to be derived from crossbreed between the *Bos sondaicus* and the *Bos indicus*. At the moment there are 600,000 cattle relatively isolated on the island of Madura and another 100,000 heads in East-Java. Madura cattle are uniform

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Table 1. Livestock population 1971

Livestocks	Number (heads)	No. per km ² land area	No. per ha agric land	No. per 100 of population	Remarks
1. Cattle	6,308,981	3.11	0.36	5.3	Indonesia :
—native	6,243,135	3.08	0.35	5.2	Land area 2,027,087 km ²
—dairy	65,846	0.03	0.00	0.1	Arable land (sxcl. West Irian)
2. Buffaloes	2,916,125	1.44	0.16	2.4	17.7 million ha
3. Horses	665,189	0.33	0.04	0.6	Irrigated 4.3 million ha
4. Goat	6,941,915	3.42	0.39	5.8	Rainfed 8.4 " "
5. Sheep	3,148,865	1.55	0.18	2.6	Parmanent crops 5.0 " "
6. Pigs	3,288,398	1.82	0.19	2.8	Total (human) population
7. Chickens	75,640,540	37.31	0.00	0.62*	119.2 million
—native	73,841,750				Rural 82.6%
high breed	1,798,790	0.00	0.00	0.02*	
8. Ducks	10,972,840	5.41	0.62	0.09*	* per caput.

Source : Directorate General of Animal Husbandry.

in type, brownish coat colour with white socks and white backside. But the white areas are not so clearly defined as in the Bali. This breed is smaller than the Bali and possess a hump. The Madura males weight 250–300 kg at maturity and the female are 150–200 kg at 6 to 8 years of age.

All these three breeds are well adapted to local environmental conditions with tropical climate, scanty feed. No reproductive data is available. They are not milked. Their milk production is undoubtedly very low.

The dairy cattle husbandry is less encouraging. There are an estimated 65,000 dairy cattle in Indonesia (1971). Practically all dairy cattle are Holstein Frisian and its crossbred. The crossbred is called "Grati" cattle, mentioned after the village where they have been developed from crossbred between Holstein Frisian and local Ongole cattle. The producing ability of Holstein Frisian in this country is approximately 2,200 litres, the crossbred 1,500 litres per lactations. Only about half of the cows are in milk.

The waterbuffalo ranks next to the cattle. The buffalo has been extensively used for paddy cultivation. In Sumatra, South Sulawesi, Nusa Tenggara islands the buffalo is milked. There is no record on milk production. The milk is used for manufacturing products as native yogurt and local cheese.

The waterbuffalo has demonstrated its value in Indonesia as a draft animal, particularly in the rice producing areas, and as a milk producer. It is worthy of more attention than it has so far received by agencies interested in livestock improvement.

There are three distinct breeds of sheep in Indonesia. One of these is the Priangan sheep also called the Garut sheep. This breed is a three-breed cross between Merino, Fat-tailed sheep and a native breed. The Merino was imported in 1864. Sheep are kept primarily for meat production and stable manure.

The quality of the wool produced by these sheep is only suitable for carpet manufacturing. The distribution is concentrated in Java and Nusa Tenggara islands, among which 42.9% is in West-Java where the climate is relatively humid. The body weight for males are 49.2 kg and for females 28.9 kg at maturity.

The native goat has been improved to a small extent with imported Ettawa goat (Jumnapari goat) from India. In some places the Ettawa goat is milked for home consumption.

Pig meat is not universally acceptable. Even though pig^{*)} comprises the third most important species after cattle and buffalo in capital value.

The main producer of chicken eggs and chicken meat in this country is still the native chicken^{**)}. These chickens are a type of local breeds with liveweight maturity of about 750 gram to 1 kg. The females produce about 40 eggs per year. These birds live as scavengers.

In the last decade commercial production of eggs using improved strains of poultry has been developing, especially around consuming centres i.g. Jakarta, Bandung and Bogor in Javan and Medan in Sumatra. The number of modern breeds chickens has been estimated at 3 million heads in 1972. This figure has increased from 250,000 head in 1969.

Production systems.

Animal husbandry in Indonesia generally subsistence oriented. The technique of production is still traditional. The main input in the animal production is proportionally labor. Any other kind of input like fertilizers for grass production, feed concentrates are not common.

Cattle and buffaloes are fed with grasses cut along road sides, drains and unused lands. Full use is made of all crop residues like corn straw, soybean and peanut fodder, sweet potato vines.

In Nusa Tenggara there are still extensive natural unimproved grasslands where the animals are grazing freely. These lands are owned by the community or the local government. Every farmer may make use of it without any pasture management.

The animals are kept primarily for draught purposes and for the production of manure, especially in Java, Madura, Bali and Lombok. Therefore the herd size is small, 2-3 cattle/buffalo per farm. In Nusa Tenggara and Sulawesi, where the animals can graze freely, the herd size may vary from ten to hundreds.

A third type of production is practised by commercial beef producers in Sulawesi and Timor with intensive capital investment and managerial know-how.

Pork production is mainly traditionally managed with scavenged feed supply system.

The poultry farming on a commercial scale has developed during the last few years and interest in it is still increasing.

Small holding an specialized duck farming as well has been found in Indonesia. Detailed information has been submitted separately.

Technical problems related to animal production.

Selection of sires is based on conformation. There is no performance and progeny testing yet carried out for ruminants and pigs in this country. Only for chicken a random sample test has been established in 1972. Herd recording is only executed by commercial dairy cattle farms. As the average herd size is relatively small, the small holders cannot afford to manage a bull. They have to take their cattle to a bull sometimes stationed at a distant from his farm.

Artificial insemination has been introduced since 1952 for dairy cattle. But little progress have been made. The disappointing results have been due to two main constraints:

- (1) difficulty in communications.
- (2) the herd size is small i.g. 1-3 cows.

^{*)} Proportional Capital value of domestic livestock in Indonesia in 1971: Cattle 43%, buffalo 25%, pig 14%, sheep and goat 8%, poultry 5%.

^{**)} A detailed paper on duck and duck's egg production in Indonesia has been presented separately.

The low productivity of the animals is owing to many factors. But it seems that malnutrition is the most determining factor.

Research development.

It is indicated that calving percentages are generally low and growth rates are slow. But such data give no indication of variation among production systems nor of reason for poor reproductive or growth performance. So the research programme for the second Five-Year Plan (1974–1979) is confined to performance testing, selection and progeny testing of important indigenous livestock. A performance test of Bali cattle has been commenced at the Regional Experiment Station in East Java. Studies would also be made on Madura cattle, Grati cattle, water buffalo, sheep and ducks. It is important that these data be obtained before indiscriminate importation of other breeds or semen occurs.

It is obvious that also feeding experiments with existing feedstuffs for meat, milk and egg production need priority. Trial would be instituted to investigate whether the feeding of various concentrates will economically increase production.

In order to do this, a great amount of resources will have to be made available in for upgrading and maintaining field stations and financing farm level trials. Technical assistance will also be necessary to enable a reorientation of the work and training of existing staff to be completed.

Discussion

T. Suzuki, Japan: Do you export eggs produced on commercial egg farms to abroad? Or, are they produced for domestic market?

Answer: Until now eggs produced on commercial egg farms are for domestic market.

T. Suzuki, Japan: Do you recognize any different agro-ecological regions in vast Indonesia? If you have any, where are the most suitable region for beef cattle raising?

Answer: There are different agro-ecological regions in the eastern part of Indonesia. The most suitable region for beef cattle raising in the eastern part is the island of Sulawesi.

Y. Tanabe, Japan: You said that egg production per female duck ranged from 250–300 eggs per year. Is this figure derived from special flocks or from all flocks? And how about average egg production of Indonesian ducks?

Answer: Egg production of 250–300 eggs is reported from the Indian Runner in Central Java. Production figure from other breed (strain) is not available yet.

Research on average egg production of all strain Indonesian ducks is not carried out yet. But it will be our programme to find out the production performance of our ducks in the second Five Year Development Plan (1974–1979).

Watanabe, Japan: Why crossbreeding is prohibited in Bali? And by whom this policy is insisted? By national government or local government or breeder's association? What is the alternative of this prohibition for the further improvement of Bali cattle?

Answer: The regulation prohibiting crossbreeding on Bali is insisted by the Central Government. The reason is to secure the pure genetic stock. When improvement of Bali by crossbreeding has been proven, while pure breeding is not promising any longer, I think that there will be no reason any longer to prohibit this crossbreeding in Bali itself.

(Note: A crossbreeding project is carried out at this time.)

Tim Bhannasiri, Thailand: Concerning about duck, do the farmers feed some

feed supplement during the night time when they comeback from the rice fields?

Answer: It depends, from one farm to another farm. Some give some concentrated feed besides the food that they could get from the rice fields, but some don't.