9. ANIMAL PRODUCTION AND RESEARCH IN THAILAND

Tim BHANNASIRI*

Thailand has a total land area about 321,250,000 rai. (6.25 rai equal to 6.25 hectare). From this total land, about 23.53 percent are farm holding land, 56.23 percent are forestry land, 0.53 percent is swamp and lakes and about 19.71 percent of the whole country are unclassified land.

The Thai Government has a program to develop all of the unclassified land into the public pasture for raising beef cattle and water buffaloes in the near future.

The Department of Livestock Development has a direct responsibility for the development of the livestock industries of the country. However, there are some other government agencies which also participate in the livestock industries both in research and extension works. These are the Kasetsart University, Chiengmai University and Khonkaen University.

Three Agricultural Research Centers have been developed in the central, north eastern and northern parts of the country.

There are two dairy projects which are assisted by the Danish Government at Muak Lek, Saraburi in the central part and the other by the German Government at Chiengmai in the northern part of the country.

However, the Department of Livestock Development takes most of the active work for developing the livestock industries except swine and poultry industries which are mainly in the hand of the private enterprises.

Livestock Population of Thailand

The total population of the livestocks which are the most economical importance to the country is shown in Table 1.

Table 1. Livestocks Population of Thailand (1970)

Kind of Livestocks	Number, heads
Water Buffaloes	5, 734, 000
Cattle	4, 667, 000
Swine	5, 132, 000
Poultry	58, 790, 000
Ducks	7, 110, 000

Animal Research In Thailand

Most of the research works were conducted by the universities while the animal breeding work was mainly done by the Department of Livestock Development.

For the convenience of the readers the research work in each kind of livestocks will be discussed separately as follows:—

* Department of Livestock Development, Ministry of Agriculture and Cooperative, Thailand.

Water Buffaloes

There are about 5.7 million heads of water buffaloes in Thailand. They are considered as both working and meat animals. Those which are not suitable for working will be sent to the slaughter house for human consumption. The demand for water buffalo meat is very high both in the local market and the international market. Therefore, there is a high trend for water development in Thailand.

Water Buffalo Research

(1) Water Buffalo Breeding

It seems to be generally accepted by the Thai people that the body size of the Thai buffaloes is now decreasing due to the selling of the larger size animal to the traders because of the higher price than the smaller one and the farmers keep the smaller size animal for breeding purpose.

The average body size of the buffalo bulls is about 450 kilograms while the buffalo cow is about 350 kilograms generally. However, the buffalo bulls at the body weight of 750 kilograms and the body weight of 600 kilograms of buffalo cows are still available for using as the breeding stock for the improvement of our stocks.

Two water buffalo Research Centers are established by the Department of Livestock Development. One at Surin, in the north-eastern part and another one at Surajdhani, in the southern part of the country. However, these are still in the beginning stage of the research work. The research on breeding, physiology of reproduction, nutrition, feeding and management are included in these stations.

In order to prevent the decreasing in body size and to get the breeding stocks for the farmers, the government had set up a certain amount of budget to purchase a number of breeding bulls to loan to the farmers last year. This project will be continued this year too.

(2) Water Buffalo Reproduction

Generally speaking, the buffalo cow will produce two calves in a period of three years. Our recent survey indicated that the percentage of calf crop in buffallo is about 60 percent and the pre-weaning mortality rate is approximately 25 percent. The main causes of high mortality are due to the malnutrition and parasitic infestation. Therefore, the increase in calf crop production is one of our high light in our research project.

(3) Water Buffalo Nutrition and Feeding Researches

Water buffalo is raised mainly on rice straw and the natural grasses. The grain, generally pady rice, is fed only occasionally for particular purpose such as during the working period.

The feed lot fattening is now under conduct at the North-East Agricultural Research Center while the digestion trial is now also conducted by the Khonkaen University. Different kinds of feeding and managements are going to be investigated by the Department at Surin Research Center in the near future.

Beef Cattle

There are about 4.6 million heads of cattle in Thailand. Most of them are considered as the working and meat animal as same as water buffalo. Approximately 4,000 heads are the exotic breeds of beef cattle which were imported for breeding improvement. Another 500,000 heads, approximately, are the cross bred between the native cattle and the beef cattle from the imported ones.

As same as the water buffalo, the demand of cattle both for local consumption and for exporting is very high. These cause both decreasing in the body size and

the overall population of our cattle. In our next five year programs, the beef cattle improvement project will be an active part of the Department.

Beef Cattle Research

(1) **Beef Cattle Breeding**

Generally speaking, the average body size of the native cattle are 350 and 300 kilograms in the bull and cow, respectively. In order to improve the body size of the local stocks as well as the quality of the meat several exogenous breeds of beef cattle were imported for investigation. These include the American Brahman, Santa Gertrudis, Charolais, and Devon Shorthorn.

From our several years observations, indicated that the Santa Gertrudis, Charolais and Devon Shorthorn are not well adapted to our condition for raising as the pure bred stocks. These cattle are highly susceptible to the Tick Fever and can not resist well to the drought condition while the American Brahman can overcome those problem very well.

Now, in our National Beef Cattle Breeding Improvement Program the American Brahman is selected to be used for the improvement of our local stocks. About 500,000 heads of the cattle are the cross bred between the local stocks and the American Brahman now.

In order to speed up the project, the Government had set up some budget to purchase some cross bred bulls to loan to the farmes last year and this will be repeated again this year. This project will last for about 5 years and then the pure bred stocks will be used for replacing.

(2) **Beef Cattle Reproduction**

Our native cattle is generally known as the "Bangala" cattle which is similar to the Zebu cattle has an average calf crop of aproximately 61 percent and the pre-weaning mortality rate of about 15 percent. The main causes are the same as the water buffalo.

The artificial insemination of using frozen semen just introducing in the country a few years ago and it is going to be a very popular in the near future.

It is expected that, through the using of frozen semen and the natural breeding about one third of our population will be improved in the next five year plan, and almost all of the population will be improved in the next ten year plan.

(3) **Beef Cattle Nutrition and Feeding Researches**

Pasture development have been investigated by the Department in every region of the country. It is found that the Para grass is the most suitable one for our condition. The improvement of the natural pasture with the Para grass is now under the active program of the Government. It is expected that about 5,000 to 100,000 rai will be developed to be a good pasture each year for the farmers.

Feed lot experiments are also conducted by both the government organization and the private enterprises. However, it is not generally practiced in the comercial scale because there is no grading system on the meat of different quality avilable at the present time.

Dairy Cattle

From the total amount of approximately 4.6 million heads of cattle in Thailand, about 60,000 heads are the dairy cattle. Most of the dairy cattle are the cross bred between the Brown Swiss or Holstein Friesian and the native ones.

The milk production of our native cattle is approximately 800 to 900 kilograms per lactation. The lactation period is an average of 240 days.

(1) **Dairy Cattle Breeding**

Due to the low milk production, several exotic breeds of dairy cattle were imported for the improvement of the local stocks which including the Jersey, Brown Swiss, Holstein Friesian, Red Dane, German Brown, Red Sindhi and Sahiwal.

From the several years investigation, it seems to us that the purebred stocks could not adapted to our environment while the cross bred ones are very promising for us for future development of dairy industries for our country.

However, we also did observed that when the exotic blood in the cross bred stocks increasing beyond 75 per cent, then the milk production will drop and the vigor also decreas. It is generally practiced in our country at the present time to keep the exotic blood of the cross bred dairy cattle not more than 68.75 per cent in order to prevent the decreasing in milk production.

Among all of the temperated breeds of dairy cattle which were imported into the country, it was noticed that the Holstein Friesian seems to be the best one for both raising as the pure bred stocks and the cross bred ones. The Red Sindhi and Sahiwal seem to be equal in all respects as raising for dairy purpose in Thailand.

The cross bred between the temperated breeds and the native "Bangala" cattle is generally observed to be superior than that between the temperated ones and the Red Sindhi or Sahiwal.

(2) **Dairy Cattle Reproduction**

The artificial insemination was introduced into the country about 20 years ago for improvement of our local stocks as well as the natural breeding. At the present time both of the fresh semen, storage in the refrigerater, and the frozen semen are used in Thailand. The Semen Bank is now under the consideration of the Government to be established in the near future with the cooperation from the F.A.O. and other interorganizations.

(3) **Dairy Cattle Nutrition and Feeding Researches**

Dairy cattle nutrition and feeding researches are still at the beginning stage for Thailand. There was a small number of investigation in these fields available at the present time. Most of the works along these fields were based on the oversea data with some modification in order to suit to our condition. The dairy ration is generally consisting of rice bran, broken rice, corn, sorghum grain, cassava meal, peanut oil meal, soybean oil meal, coconut oil meal, ipil-ipil, steamed bone meal, oyster shell, trace minerals and some vitamins.

Swine

There are about 5.1 million heads of swine in Thailand. About 80% to 90% of the total population are crossbred pigs between the exotic breed and the local pigs.

The native pig has a slow rate of growth, larger bones and higher in fat percentage but is very good in motherering ability.

(1) **Swine Breeding**

In order to improve our local pigs, several exotic breeds were introduced into the country which including Bergshine, Hamshire, Middle white Tamworth, Large White, Duroc Jersey and Landrace. However, from several years of investigation, we decided that the Large White, Duroc Jersey and Landrace will be used for our Nation Pig Breeding Program.

The Pig Breeding Research Centre is now under establishing by the joint venture between the Thai Government and the Rockefeller Foundation at Kampangsan, Nakorn Pathom (about 100 km, south of Bangkok).

(2) **Reproduction**

The artificial insemination in swine is generally practiced. There are 28 artificial

insemination units located in different part of the country to serve the farmers with free of charge. About five more artificial insemination units will be set up this year. It is expected that in the near future the Government will set up at least 1 unit in each province (total of 71 provinces).

(3) **Nutrition and Feeding Research**

There is no standard nutrient requirement for swine available for our country at the present time. However, all of nutrient requirements from over sea were tested both at the universities and Department of Livestock Development. The modification of these recommendation is now generally practical among the feed mills and farmers.

However, it is generally observed that the pig ration in our country seem to be rather limited of methionine and lysine. The supplementation of these two amino acids in the ration which mainly consisting of rice bran, broken rice, corn, cassava meal, peanut oil meal, soyabean oil meal and coconut oil meal is generally practiced.

Poultry

It is estimated that about 60 million heads of poultry are raised in Theialnd at the present time. About 80 per cent of the total population are broiler breed and about 19 per cent are laying breed while the rest are the native breed which rather similar to the old Chinese origin.

(1) **Breeding**

(a) Egg-Layer. Most of the egg-layers are the Rhode Island Red. This breed was introduced into the country about 30 years ago, and was selected for egg production both by the Government Agencies and the private enterprises. The average egg production is 226 eggs per years while the average production of egg-laying contest of 1972 was 246 eggs in 350 days and the one who got the first price laid 336 eggs in the same period.

However, most of the poultry breeding research at the present time is in the hand of the private enterprises. The Government has only a duty to guide them.

Several hybrid chickens are introduced into the country at the present time especially the Harco (from Arbor Acres), the Hyline and Dekart which are very popular among the farmers.

(b) Broiler Breed. Most of the broiler chicken parent stocks are imported from various countries especially form the United State of America. These including Arber Acres, Shaver, Pilch, Hubbard, Welps and Hyline. These are considered as the first class broiler while the second class from crossing from various sources are also available in the market and seem to be more preferable among the rural people.

(2) **Nutrition Research**

Again; there is no standard nutrient requirement for poultry available for our local use at the present time. The modification of all available data from over sea are generally practiced by our feed mills and farmers.

The ingredients for formulating poultry rations mainly consisting of rice bran, broken rice, corn, sorghum grain, cassava meal, peanut oil meal, fish meal, shrimp meal, and ipil-ipil. All kinds of vitamins and some trace minerals are including in the ration especially the manganese and zinc.

Ducks

There are about 7 million ducks in Thailand at the present time. Most of them are native ducks which including three different varieties, i.e.—Smuthprakarn, Cholburi and Nakorn Pathom ducks. They are early egg-laying ducks but the average production is about 220 eggs per year. They can fed with very simple ration and have a higher tolerance to duck virus hepatitis and duck cholera.

Ducks are raised for both egg and meat purposes.

(1) **Breeding Research**

We are thinking that even our local ducks are higher resistance to certain diseases but the production is rather low. Therefore the Khaki Campbell was introduced into the country about 25 years ago to improve our local stocks. The average production of the cross bred duck is about 240 eggs per year.

The Peking ducks were also introduced into the country for increasing the body size of our local stocks but they are not very popular to the Thai people who prefer the smaller size duck. Therefore, the Pekinose from Holland was imported for further investication.

(2) **Nutrition Research**

The mixed concentrated feed is now going to replace the old ration which is generally consisting of rice bran, boiled-rice and vegetable for the ducklings and raw fish or oyster for the mature ducks. The modification of chicken feeds for raising ducks both in the form of pelleted and mash feed are now very interesting to the duck farmers.

Conclusion

Animal research in Thailand is just about the beginning stage at the present time. Very few works had been investigated locally. Therefore the private enterprises or the farmers have to use the oversea investigation for their own improvement. This is due to several problems in the past. However, after the organization of all government agencies which have a duty concerning with animal research especially the Kasetsart University, KhonKaen University, Chiengmai University, Department of Livestock Development, Regional Agricultural Research Center in the central, North-Eastern and Northern part of the country, we do hope that much more research works on animal science will be investigated.

Discussion

M. Naito, Japan: Two questions concerning crossbreeding between native breed and exotic breed in cattle. The first, is there any difficulty at parturition in crossing with Charolais?

Secondly, which is the better Jersey or Brown Swiss for crossing under the environment in your country?

Answer: 1. There is no problem about parturition difficulty at all since the last 4 to 5 years when we started investigation on this subject.

2. According to our observation we found that the Jersey is not suitable to our condition. While the Brown Swiss, it seems to me, is very promising one.

In our next 5 year plan from 1971–1975, we are going straight with Holstein Friesian and Brown Swiss. And the cross breeding cattle from these two breed will be introduced mainly through the artificial insemination.

M. Pandjaitan, Indonesia: 1. Indirect method of getting body weight of water buffalo.

2. Any intention to improve the milk producing ability of water buffalo as milking buffalo.

3. Are the data of the crosses and the data of native cattle already published? I mean figures of native cattle for comparison.

Answer: 1. We use the following formula to estimate the water buffalo weight:

$$\text{Body weight (lb)} = \frac{\text{Body length (inch)} \times \text{Heart girth (inch)}}{360}$$

2. The native buffalo is very low producing animal, about 800 kgs, for 180–200

days lactation period. Therefore, a herd of Murrah buffalo was imported from Malaysia for improving.

3. Yes, there are some available data in our hand, I am very pleased to send some of them to you later.

B. K. Soni, India: I was very happy to learn that scientific studies are being made on elephants. Elephant has economical importance for India also. Have any studies been made and published on the reproduction in elephant and nutritional requirements of this animal? I will appreciate receiving any published literature on this animal.

Answer: Yes, the paper will be published by FAO in the near future.

Chau Khim, Khmer Republic: Have you encountered difficulties with the adaption to local climate and feeding from the imported cattle of breeds Charolais from France?

Answer: It seems to be all right from our own observation but we did found that the heat tolerance is not very good and they are highly susceptible to tick fever. We dare not allow them to go out from the station yet. However the crossbred ones seem to be very healthy and promising to us. However, the good management and feeding are highly recommended.