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บทความปริทัศน์

The Need for Animal Health and Production Development Assistance in Thailand*

ความต้องการด้านเทคโนโลยีเพื่อพัฒนาด้านสุขภาพสัตว์และการผลิตในประเทศไทย

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ในช่วง 10 ปีที่ผ่านมา ประเทศไทยมีการเจริญเติบโตทางด้านเศรษฐกิจมาก ทั้งนี้เพราะธุรกิจการค้าขายและการพัฒนาภาคอุตสาหกรรม ประเทศไทยเป็นประเทศที่มีศักยภาพในการผลิตปศุสัตว์อีกด้วย สถิติในปี 2533 ประเทศไทยมีกระบือ 6 ล้านตัว โค 5 ล้านตัว สุกร 11 ล้านตัว และไก่ 550 ล้านตัว อัตราการเจริญทางเศรษฐกิจในปี 2532-2533 ประมาณ 6.9% ในปี 2533 ประเทศไทยส่งออกไก่สดแช่แข็ง เป็นเงินมากกว่า 4,020 ล้านบาท และกุ้งกุลาดำ 8,959 ล้านบาท ส่วนปศุสัตว์พวกโค กระบือ และสุกร ยังไม่สามารถส่งออกได้ ทั้งนี้เพราะยังมีปัญหาเรื่องการผลิตและโรค ในแง่ของนมและผลิตภัณฑ์นม ในปี 2534 การบริโภคภายในประมาณ 594,000 ตัน แต่สามารถผลิตได้เพียง 25% (147,000 ตัน) มีผลทำให้ประเทศไทยเสียดุลการค้าถึง 4,000 ล้านบาท ในช่วง 5 ปีที่ผ่านมาประเทศไทยเพิ่มประชากรโคนมเฉลี่ยปีละ 24% ปัจจุบันนี้มีประมาณ 144,300 ตัว รวมทั้งโคนมพันธุ์แท้และพันธุ์ผสมโฮสไตน์ ฟรีเซียนประมาณ 20,000 ตัว ส่วนมากมีการเลี้ยงกันมากบริเวณภาคกลางของประเทศ ประเทศไทยเป็นประเทศเกษตรกรรมในเขตร้อน มีศักยภาพสูงในการผลิตปศุสัตว์ในเชิงธุรกิจ อย่างไรก็ตาม ปัญหาก็คือพันธุ์สัตว์ในประเทศให้ผลผลิตต่ำ และการควบคุมโรคยังมีประสิทธิภาพไม่ดี มีผลทำให้การผลิตปศุสัตว์ไม่สามารถแข่งขันตลาดต่างประเทศได้ การดัดแปลงและนำเทคโนโลยีชีวภาพที่เหมาะสมมาใช้ จะช่วยแก้ปัญหาดังกล่าวได้

คำสำคัญ : *ความต้องการด้านเทคโนโลยี, สุขภาพสัตว์, การผลิต, ประเทศไทย*

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Abstract : **Peerasak Chantaraprateep. 1992. The need for animal health and production development assistance in Thailand. Thai J Hlth Resch 6(1): 59-68**

Thailand has acquainted during last 10 years an economic growth thanks to flourishing commerce and accelerated development of industrial sector. Thailand is also a country of livestock production as shown by following statistics: 6 million of buffaloes, 5 millions of cattle, 11 millions of pigs and 550 millions of poultry. On average the growth was 6.9% (from 1988 to 1989). In 1989, only broilers and black tiger prawn were exported amount 4,020 and 8,859 million baht respectively. Cattle, buffaloes and pigs are not available for exportation due to problems of production and disease. Domestic milk and milk products consumption in 1991 was about 1627 tonnes/day (594,000 tonnes/yr) but local production is 25% of the the demand (403 tonnes/day, 147,000 tonnes/yr). Consequently, Thailand suffers deficit of 4,000 million baht annually for importation of milk products. During last 5 years number of dairy cattle increased 24% annually and at present there are about 144,300 heads including 20,000 imported pure breed Holstein Fresian. They are reared mainly in the central part of the country. Thailand as an agricultural tropical country has its potential for livestock production. However, constraint of low productive animals and improper disease control cause the country less productive. Adapted biotechnology will help improving such conditions.

Key words : *Animal health, Production, Technical need, Thailand.*

INTRODUCTION

Thailand is an Asean country, has surface area of 514,000 km^2, located between Burma (West and North), Laos (East and North), Kampuchea (East), and Malaysia (South). Situated between 97° and 106° East longitude and 5° and 21° North latitude. Thailand has a tropical humid climate, 2 seasons, rainy season begins in May to November and dry season covers December to April. The pluviometry ranges between 1,100 mm to 4,400 mm and the temperature ranges between 23° to 31° C. Demographic evolution, during 20^{th} century were 6-7 million inhabitants in 1905, 40 and 55 millions in 1975 and 1990 respectively. During last 10 years Thailand has an economic growth thanks to commerce and all accelerated development of industrial sector.

Agriculture is still an important influence on wage rates, with more than half the labour force working primarily on farms and about one third growing rice. But industry is exerting a greater pull on wages. With higher wage rates, the only way rice production could be sustained would be for labour productivity to increase perhaps by mechanization. According to Ministry of Agriculture for the 1990-1991 season, the main rice crop will be a sizeable 11% less than in the previous crop year at 16.01 million tonnes, 2.04 million tonnes down. Maize production is estimated at 3.66 million tonnes, down 17% and cassava down 1% at 20.56 million tonnes. Similar declines of 1-5% are estimated for sorghum, mung beans and soybeans. Only sugarcane, kenaf and peanuts are registering production increases. Cane production is estimated at 34.01 million tonnes, up 1%. While for kenaf is sharply up 14% at about 190,000 million tonnes.

ECONOMIC INDICATORS OF THAILAND

It's predicted that consumer demand will grow at a moderate level of 5.5% next year while investment development would be in the range of 8-11% (Bt 597.3 billion) (NESD, 1990). The deficit is expected to rise to 7.6% of the gross domestic product (GDP) at Bt 172.6 billion. Next year's growth rate will be 7-7.5% with inflation at about 8%. Problems will be created because of the uncertainties in the Gulf, oil prices and world trade resulting from the collapse of the Uruguay Round of talks, which will lead

to greater trade protectionism. The income gap between the rich and the poor will widen from the current estimation of 13 times due to the fall in the prices of agricultural products. The agricultural sector will grow at a dismal 2% compared with 0.5% this year.

Investment in the public sector will grow by 13.5% next year from this year's Bt 131.7 billion, of which Bt 101 billion are attributed to construction.

The country's gross national product (GNP) is expected to reach Bt 2.3 trillion next year from this year's Bt 2,051 trillion, with a per capita income of Bt 40,016 and Bt 36,399 respectively.

The growth in the industrial sector is predicted at 8.5% next year and 9% in the construction sector. Exports will grow by 13.6% next year to Bt 670 billion while import will rise 15.3% to Bt 940 billion.

Next year trade deficit will be 11.7% of GDP (Bt 270 billion). The service account will show a higher surplus of 13% next year from tourism earning, which is expected to reach Bt 126.2 billion. Table 1 reveals economic indicators of Thailand during 3 years (1989 to 1991).

Table 1. Economic indicators of Thailand.

Traits	Year		
	1989	**1990**	**1991**
1. GDP Growth (%)	12.2	10.0	7.0
1.1 Agriculture	6.6	0.5	2.0
1.2 Manufacturing	14.9	13.7	8.5
1.3 Construction	21.3	22.7	9.0
1.4 Others	11.8	9.5	7.0
2. Expenditure Growth (%)			
2.1 Consumption			
Private	10.9	9.1	5.5
Public	−0.1	2.9	3.0
2.2 Investment			
Private	15.7	23.0	8.0
Public	5.7	33.3	13.5
3. Consumer price index	5.4	6.0	8.0
4. Exports of goods (bn of baht)	509.9	590.0	670.0
Growth (%)	27.7	15.7	13.6
5. Imports of goods (bn of baht)	650.7	815.0	940.0
Growth (%)	29.7	25.2	15.3
6. Trade balance (bn of baht)	−140.8	−225.0	−270.0
Trade deficit/GDP (%)	−7.9	−25.2	−11.7
7. Current Account Balance (bn of baht)	63.7	−136.5	−172.6
CAB/GDP	−3.5	−6.8	−7.6
8. Income from tourism (mn of baht)	96,365	111,700	128,000
9. Per capita income (Bt)	32,094	36,399	40,016

Source : NESDB
Bank of Thailand

ANIMAL PRODUCTION DEVELOPMENT

Thailand as an agricultural country, production of livestock and black tiger prawn during 1985 to 1989 has increased about 20% annually as shown in Table 2. Export values of livestock is shown in Table 3.

Table 2. Livestock production in Thailand.

Species	Year				
	1985	1986	1987	1988	1989
Dairy cattle	50,988	69,907	75,500	109,100	135,200
Cattle*	6.9	6.9	7.9	7.5	7.5
Buffaloes*	7.3	7.5	7.8	7.7	7.6
Pigs*	4.2	4.2	4.2	4.3	4.7
Layer*	2.2	2.2	2.3	2.5	3.0
Broilers*	357.5	385.8	450	458	552
Black tiger prown**	106	879	8,000	5,800	60,000

Office of Agricultural Economics.

*million **metric tonnes

Table 3. Export value of livestock (million baht).

Species	Year				
	1985	1986	1987	1988	1989
Pigs	112.5	85.8	25	4.6	14.5
Broilers	1,467	3,121	4,020	4,901	5,464
Prawn	3,439	4,391	8,958	9,000	10,000

Department of Custom.

Production of important crops

Crops production in 1989 increased 7.4% compared to those 14.4% in 1988 due to reduction of principle crops: corn and cassava while for rice and rubber they increased slightly as shown in Table 4. Domestic demand of raw material for animal feed (metric tonnes) as shown in Table 5.

Table 4. Important crops production in Thailand.

Crops	Year		
	1978-1988	1988-1989	1989-1990
Rice	18.04	20.88	20.65 mt
Land used	58.47	59.37	59.95 mr
Corn	2.78	4.69	4.46 mt
Land used	10.94	11.32	11.21 mr
Cassava	22.31	24.26	22.31 mt
Land used	9.88	10.14	9.39 mr
Soyabean	0.34	0.52	0.61 mt
Land used	2.26	2.51	2.89 mr

Source: Office of Agricultural Statistics.
mt = metric tonnes
mr = million rai (1 acre = 2.5 rai)

In 1992, demand for corn used in feed mill is expected to increase 9.6% to 3,068,550 tonnes. Demand for soyabean meal should rise 9% to 643,002 tonnes while domestic production total 527,000 tonnes.

Table 5. Domestic demand of raw material for animal feed (metric tonnes).

Crops	Year		
	1988	1989	1990
Corn	2,016	2,231	2,325
Broken rice	255	266	279
Sorghum	243	256	292
Rice bran	736	846	878
Soyabean cake	570	660	723
Mung bean cake	30	33	34
Fish meal	472	543	602

To meet the domestic demand Thailand has to import around 200 metric tonnes of soyabean cake annually, lesser amount in terms of peanut cake and sun flower seeds.

It is expected that the feed mill business will expand in 1992 inspite of raw material shortages. Increase up to 7 million tonnes or 15% more than in 1991, with 4 million tonnes of processing meal.

DAIRY PRODUCTION PLAN

During 1988-1991 targeted for farmers rearing dairy cattle of 400 members annually and each member possesses 5 cows. Expected annual increase of 1,000 cows between 1992 and 1996.

CONSTRAINTS

Some major constraints to be tackle simultaneously together with the plan and can be divided into 3 aspects.

1. Production
2. Marketing
3. Others

1. Production

1.1 High cost of production, due to lack of basic know how of provision of roughage for dairy cattle which is indisponsible. Farmers tend to supply more concentrate to their animals but not enough roughage due to limitation of land for pasture.

1.2 Lack of fund from the beginning of the operation.

1.3 Lack of technical promotion personnels from the government sector together with the fact that dairy farms tend to scatter causes poor service of both veterinary and artificial insemination.

1.4 lack of genetic source of dairy cattle consequently importation of pure breed of dairy cattle is unavoidable and resulting in high price of imported animals.

2. Marketing

2.1 Dairy co-operative lacks of fund for investment.

2.2 Recombined milk is cheaper than raw milk produced locally due to subsidize policy in foreign countries.

2.3 Lack of planning and development of produces.

3. Others

Lack of infrastructure causes organization of milk collection centres, transportation and dairy products are carried out independently between private and government sectors. Consequently, national policy is hard to formulate and implement.

Milk production on average increased 24% annually; when compare to the domestic demand it's accounted to be around 20% (Table 6) and the dairy cattle population is shown in Table 7. The main dairy cattle farming area are in the central part of the country. Although domestic milk production has increased but it still could not meet the demand and recombined milk about 108 tonnes/day is needed in addition to existing production.

Table 6. Raw milk production, domestic demand and the differences unit: metric tonnes.

Year	Milk production	Domestic raw milk demand	Difference
1988 (2531)	99,500	323,200	−223,700
1989 (2532)	110,300	354,000	−234,700
1990 (2533)	143,000	383,000	−239,800
1991 (2534)	171,800	415,400	−243,600
1992 (2535)	206,200	444,300	−238,100
1993 (2536)	247,400	475,800	−228,400
1994 (2537)	296,900	502,800	−205,900
1995 (2538)	356,300	530,600	−174,300
1996 (2539)	427,600	551,700	−124,100

Table 7. Dairy cattle population.

Year	Total	Milking cows	Milk yield (tonnes)
1985 (2528)	57,094	26,446	51,371
1986 (2529)	69,907	33,428	62,089
1987 (2530)	81,252	39,854	79,156
1988 (2531)	94,836	53,472	99,500
1989 (2532)	110,227	62,019	110,300
1990 (2533)	144,300	72,800	143,000

Due to insufficient domestic supply, importation of milk and milk products from European countries are shown in Table 8 and 9.

Table 8. Imported baby milk powder (tonnes)

Country	Year		
	1985	1986	1987
Denmark	3,373	1,231	1,109
Irland	98	98	186
The Netherland	1,825	1,859	2,090
UK	98	98	106

Source: Department of Custom

Table 9. Imported milk powder.

Year	× 100 tonnes
1987	11.71
1986	11.53
1985	5.217

Source: Department of custom.

The following tables show species of animals imported (Table 10), original countries of cattle exportation (Table 11), and bovine semen exported countries (Table 12).

Table 10. Importation of livestock.

Species	Year				
	1986	1987	1988	1989	1990
Dairy cows	–	4,285	3,798	4,742	3,847
Beefs	–	846	1,860	2,046	4,273
Pigs	108	1,298	1,886	1,652	587
Buffaloes (dairy types)	389	352	317	599	324
Chicks GP broiler	143,076	133,002	191,056	179,478	142,567
Chicks PS broiler	912,897	1,238,895	2,006,525	1,720,159	773,094
Chicks PS layer	182,802	318,464	398,805	296,815	249,852
Bovine semen (doses)	34,550	109,843	96,664	89,771	59,325
Pig semen (doses)	412	328	641	340	142
Sheep semen (doses)	–	125	–	–	–

Table 11. Country origin of cattle exportation.

Species	Year					
	1987		1988		1989	
	Dairy	Beef	Dairy	Beef	Dairy	Beef
Australia	985	343	620	257	591	387
New Zealand	2,992	1	2,993	957	4,141	10
USA	220	502	185	222	6	1,124
Brazil	–	–	–	302	4	523
Mexico	–	–	–	214	–	–
France	–	–	–	8	–	–
Israel	88	–	–	–	–	–

Table 12. Country origin of bovine semen exportation (doses).

Country	Year			
	1987	1988	1989	1990
USA	56,700	38,200	36,278	69,665
Australia	10,900	900	–	11,675
England	19,693	27,370	–	6,500
Canada	1,000	25,324	37,370	66,320
France	8,900	2,000	9,500	62,000
Netherland	–	2,870	–	–
New Zealand	12,650	–	–	1,000
Brazil	–	–	4,623	200
Germany	–	–	–	35,736
Japan	–	–	–	1,000
Belgium	–	–	2,000	–
Total	**109,843**	**96,664**	**87,771**	**254,096**

PLANNING FOR DAIRY DEVELOPMENT

Plan for development of dairy production is divided into 3 aspects.

1. Promotion of production

1.1 Zoning : according to appropriation of resources it will be carried out by Department of Livestock Development(DLD), Dairy Farm Promotion Organization (DFPO) and related organization.

1.2 Promotion of dairy farming

Between 1992 to 1996 expected increase 1,000 heads annually.

1.3 Provision of dairy breed

Local and imported purebred pregnant heifers will be provided for farmers.

1.4 Formation of cooperatives

To provide mutual interest and benefit to the members in terms of production transportation nutrition and semen.

1.5 Veterinary service

Provision of AI and preventive medicine is carried out by DLD.

1.6 Promotion of private sector

2. Research policy and technology transfer

2.1 DLD has been improved breed of dairy and produce deep frozen semen for further utilization for nation wide AI programme.

2.2 Feed and Feeding.

2.3 Training of personnels.

3. Marketing

3.1 Creation of milk collection centres.

3.2 Fresh milk quality control and pricing together with campaign for milk consumption nation wide.

RESEARCH AND DEVELOPMENT IS FUNDAMENTAL TO SUCCESS

Industrial development demands that Thailand adopt a more technical base to its industry: as Thai wages go up, Thailand will face increasing competition from other developing countries which can offer a cheaper labour force for the production. If Thai economy is to continue growing, it must start producing more technically sophisticated products that have a higher added value in the international merket.

Far from being an integral component of modern industrialized Thailand, however, private sector research and development (R and D) is virtually non-existent. Thailand spends only an annual average of one-fifth of 1% of its GNP on R and D, much less than Korea and Taiwan spent at a comparable level of development. Furthermore, only about 3% of funding for R and D has come from the private sector (compared to 80% in Korea) and only a small percentage of R and D is carried out by private firms: typically 80-97% of R and D takes place in government research units with another 10% carried out by state enterprises. There was the failure to establish sufficient links between the commercial sector and state and academic research institutions. Last year (1990) the government decreased the 20% plus tariff on imported manufacturing and testing equipment to 5% for all incoming companies. This move should encourage the once overly protected companies to use R and D to gain a competitive edge. Steps are also being taken, notably by the Science and Technology Development Board (STDB) to bring public-funded research groups and private firms closer together. Last October 1990, STDB sponsored a conference on biotechnology an area loaded with promise for a country as agriculturally wealthy as Thailand in an attempt to encourage collaboration between various members of the scientific, business and policy-making communities.

As for multinational corporations based in Thailand, they are being asked to do more in terms of technology transfer, and seem to be willing to oblige.

The biggest long-term constrant to Thailand's technological development may be a lack of what the World Bank report refers to as "technical human capital" or skilled manpower. Thailand is already facing an acute shortage that may worsen in the coming years as the economy outpaces the educational system's ability to provide the necessary human resources.