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REGIONAL TRAINING COURSE  
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### Country Papers on Cooperative Dairy Development - Its Problems and Prospects.

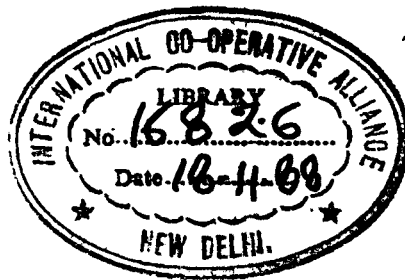
#### Name of the Country

1. Bangladesh
2. China
3. India
4. Indonesia
5. Philippines
6. Thailand



ICA/NCUI/NDDDB REGIONAL TRAINING COURSE  
ON  
CO-OPERATIVE DAIRY DEVELOPMENT,  
ANAND - INDIA,  
6-19, DECEMBER, 1987.

BACKGROUND PAPER  
ON  
CO-OPERATIVE DAIRY DEVELOPMENT IN BANGLADESH  
AND ITS PROBLEMS AND PROSPECTS.



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BACKGROUND PAPER ON " COOPERATIVE DAIRY DEVELOPMENT IN BANGLADESH, ITS PROBLEMS AND PROSPECTS" BY MESSRS. MOKHLESUR RAHMAN CHOWDHURY AND A.K.M. FAZUL HAQUE, NOMINEES , BANGLADESH JATIYA SAMABAYA UNION, FOR ICA/NCUI/NDDB REGIONAL TRAINING COURSE ON COOPERATIVE DAIRY DEVELOPMENT, ANAND, : 6-19 DECEMBER, 1987.

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1. GENERAL INFORMATION:

Bangladesh was a part of British-India till August, 1947 when it gained independence as a part of Pakistan. It achieved liberation on 16.12.71 after fighting one of the bitterest war with the Pakistan occupation forces. It is situated between 20.54° to 26.38° degree latitude and 88.01° to 92.41° degree longitude. It has a total area of 55,598 square miles most of which is river ridden. 90 percent of the population live in 68,018 Villages whose main vocation is agriculture. Total cultivable land is 31.1 million acres for a population of 102.9 million per head share being 0.3 acres. Agriculture sector plays a vital role in the economy of Bangladesh. About 85 percent of the total population in the country depend directly or indirectly on agriculture for their livelihood. This factor contributes about 52 percent to the GDP. The other sub-sectors, such as, livestock, forestry and fishery also play important role in boosting up overall agricultural crops of Bangladesh. The main agricultural crops of Bangladesh are rice, jute, tea, sugarcane, potato, pulses, tobacco, spices and oil seeds. Besides, various types of tropical fruits and vegetables are also produced here. Sources of animal protein are fish (mainly sweet water fish as the sea water fish resources have not so far been harnessed), poultry, beef and mutton.

It is estimated that the total number of cattle population in Bangladesh is about 35 million. The demand of protein per head per day is about 25 grams; but in practice they are getting on average 10 grams. The ~~annual~~ milk production is about 2.7 million litres per day and the value of milk and milk products annually produced is estimated at Tk. 15,000 crore. 250 lac Metric ton meat

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are annually sold in market the value of which is approximately Taka 1500 crore. The livestock food products represent 25% of the total food production in the country. By exporting hide and skins the country's earning annually is Taka 100 crore. The fuel cost saved out of cow dung energy is estimated at Taka 2.25 crore annually. It is estimated 14% employment is in livestock activities alone in the country. The annual commercial import of milk powder is about 25,000 Metric ton worth of Tk. 100 crore. The import cost is estimated around US\$ 50 million. The consumption of powder milk decreased to a great extent with an apprehension of high level radio-activity in imported milk powder specially from northern European countries after the Chernobyl accident; but the demand for milk did not decrease and as such import of powder milk from Australia, New Zealand and other countries increased. With the increase of population the demand for milk, milk products and meat as well will increase further. It is therefore strongly felt by all quarters that appropriate measures shall have to be taken to increase the number of livestock population under a Cattle Development Programme and develop a strong infrastructure for increasing production of milk and milk products ~~xx~~ by every farm family in the rural areas. It is also felt that the existing farmer Cooperatives and their Secondaries may be utilised by the Bangladesh Dugdha Utpadan Kari Samabaya Union (B.D.U.K.S.U) to provide cattle to every farmer family and collect/ procure milk from them in a systematic way and process for proper marketing and also to ensure supply of milk, milk products and meat to the consumers particularly in Cities and towns and other places at reasonable price to meet the demand of protein food. The government is committed to set up Directorate of Veterinary Services and Directorate of Animal Husbandry and a National Dairy Board for development of livestock and dairy industries in the Country.

2. ROLE OF GOVERNMENT IN DAIRY DEVELOPMENT:

The government has set up a Dairy farm at Savar, nearby Dhaka city for cattle farming and supply of milk to the city consumers. It is supplying improved variety of cattle to the farmers and supplying pasteurised milk in the city. There is enough scope to develop this Dairy farm to meet the growing demand of meat and milk in the Country. The government is also extending all possible assistance and guidance to the Dairy Cooperatives specially BJDUKSU for improvement and expansion of cattle farming and increase production of milk in the country and generate employment opportunities to the poor farmers.

3. THE ROLE OF COOPERATIVES FOR DEVELOPMENT OF DAIRY INDUSTRIES IN THE COUNTRY:

During fifties primary milk producers cooperative societies were organised and they were federated at the national level in a Federal unit named as Eastern Milk Producers Cooperative Union Ltd, under a development scheme at a cost of Tk.50 lacs. The total number of primary societies organised were 67. The Federal Milk Union purchased milk powder making and canning plant at Lahirimohanpur. The plant capacity was of 2000 litres per day. The members of the primary milk societies collected their milk at society level and send the same to the dairy plant at Lahirimohanpur and the Federal Union used to pay the milk primary cooperatives at supply point and the society used to pay the price of their milk at society's collection point.

During sixties the then Provincial Cooperative Marketing Society Ltd.purchased a dairy plant at Tejgaon(Dhaka) from a private company named Asto Dairy Ltd.and organised primary milk producers cooperative societies in northern part of Dhaka, Tangail and some portion of Mymensingh and collected milk from the milk producers for pasteurisation and supply of liquid milk to the city consumers.During seventies this Dairy plant was taken over by the Federal Cooperative Union of the milk cooperatives from the Provincial Marketing Cooperative Society Ltd.

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The Government of the People's Republic of Bangladesh in its First Five Year Plan (1973-78) decided to establish a cooperative dairy industry based upon collection of milk through a network of milk producers cooperative societies in some 500 villages in the milk shed areas of Pabna, Manikganj, Tangail and Faridpur. In general terms the project envisages the purchase of milk from individual farmer members of primary societies against cash payment, twice daily, transport of this milk to rural dairy plant at Faridpur, Manikganj and Tangail by a combination of various methods of transportation. After chilling, milk is transported in insulated road tankers to the market milk plant at Dhaka for processing, packaging ~~the~~ and marketing. Milk collected at Baghabarighat Plant in the district of Pabna is converted into various milk products like full cream milk powder, skimmed milk powder, butter, ghee etc. and are marketed through Dhaka market dairy under the brand name of MILK VITA.

The ever expanding city of Dhaka presently has a population of about 4.0 million. The citizens of Dhaka before the establishment of the Cooperative Dairy Complex could not get more than 4000 to 5000 litres of pasteurised milk per day. Following the commissioning of all the dairy plants under the Cooperative Dairy Complex it was hoped that after 3 to 4 years approximately 60,000 litres of pasteurised milk per day would be supplied to urban consumers in Dhaka and additionally, some 50,000 litres of milk per day during flush season will be converted into milk products. The dairy plants built under the Cooperative Dairy Complex project were to be owned and operated by the autonomous cooperative organisation, the Bangladesh Milk Producers Cooperative Union Ltd. (the then Eastern Milk Producers' Cooperative Union Ltd.) who at present are operating two chilling plants - one each in Manikganj and Tangail, one dairy plant at Baghabarighat, Pabna district, one pasteurisation plant at Faridpur and the other market milk plant at Dhaka. Under the project, by employing modern dairy technology, a highly perishable agricultural product milk, produced by small farmers in the rural areas, are being collected, processed and marketed in urban areas.

The remunerative year round market thus established in the rural areas are acting as an incentive to milk producers (who generally keep only one or two cows on their homesteads mainly on the by-products of land) to adopt scientific methods of animal husbandry in order to increase milk production.

Agricultural development programmes have often been frustrated in developing countries owing to a lack of effective organisation in the village level. The Cooperative Dairy Complex project to build a strong village based cooperatives with the participation eventually of more than 150,000 small farmer producers who through a democratic system of cooperatives would run their own primary societies themselves. The infra-structural base work has already yielded results and continued extension efforts and the impact of a steady cash market to village producers have resulted in an increase of membership in all the milkshed areas.

As a result of creation of steady cash market at the door-steps of the milk producers greater participation of the producers has been evinced to supply more quantity of raw milk to village cooperative.

To further strengthen the institutional base at village level the Federal Union have undertaken a cattle development programme through the primary cooperative societies. This programme includes animal breeding, mobile veterinary services, feed and fodder development services and extension activities to introduce better animal husbandry and veterinary practices. These efforts have been concentrated in the four milk shed areas where there exist approximately 100,000 milking cows. The cattle development programme is integrated with the extension service of the Milk Union and Livestock Department of the Government of the People's Republic of Bangladesh, is under implementation under a bilateral agreement between the Government of Australia and People's Republic of Bangladesh.



In general terms, the bilateral agreement aimed at the setting up of a milk production services unit at Baghabarighat (Pabna district) in collaboration with the Bangladesh Milk Producers Co-operative Union Ltd. to provide artificial insemination services, mobile veterinary services and feed and fodder development services to members of primary co-operative societies. It also aims at the development of general support services through the Government ~~through~~ Upazila veterinary dispensaries and the various government vaccine production centres.

The establishment of the dairy co-operative complex including construction of the five dairy plants, mentioned before, foreign exchange has been ensured on a bilateral loan agreement basis between the Govt. of the People's Republic of Bangladesh and the Government of Denmark. For the local counter-part expenditure involved in the purchase of land, construction of building, managerial support, etc. the Government of the People's Republic of Bangladesh have provided the funds in local currency with the help of the long term DANIDA loan. Danish Turnkey Dairies of Denmark supplied the machineries and completed the erection job including, planning, design and supervision of the total erection work. All the plants ~~xx~~ were commissioned by 1976 except Faridpur in 1977.

The Government of Bangladesh have obtained very valuable technical assistance from the United Nations Development Programme in Bangladesh and the Food and Agriculture Organisation of the United Nations. In fact this project was originally recommended by the ~~UN~~ FAO in 1972. Under the UDP/FAO project BGD/13/003, the Government of the People's Republic of Bangladesh have arranged for Bangladesh Milk Producers Co-operative Union Ltd. (the then Eastern Milk Producers Cooperative Union Ltd.) to receive the technical assistance directly from the 7-members UNDP/FAO team under a Project Manager.

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The Cooperative Dairy Complex Project involves four milk shed areas and based on ~~our~~ last few years of experience, it is felt that village cooperative could be organised with an average daily collection of 250 litres of milk per day per society covering about 500 villages. Primary societies are being organised more and more with a view to covering the whole country in course of time.

The Cooperative Dairy Complex, the first project of this kind for organised development of collection, processing and marketing of milk, therefore, provides the base for intensive dairying in the four milk shed areas of Bangladesh. The combinations of the factories underlines the importance of dairying in rural farm producers for raising the income of landless and marginal farmers. The direct contribution of the milk cooperatives is to provide ~~extra~~ additional income to the farmers and to create employment opportunities in the villages and narrowing the serious gap between urban demands and rural production. The Cooperative Dairy Complex, in less than five years time, has been able to build up a organisational infrastructure through which all the village development activities can be undertaken. Thus the primary aim of the co-operative dairy complex is to link rural production with urban marketing and encourage the development of dairy industry based on cattle keeping as cottage industry as a part and parcel of mixed farming pattern ~~of~~ in Bangladesh.

#### 4. DEVELOPMENT OF COOPERATIVE INFRASTRUCTURE:

The BDUKSU Ltd. has so far organised 258 primary cooperatives. The total number of members is 35,000. Total paid up share capital is Taka 18,50,000/=. Total

Total savings is Tk.5,33,000 and development loan provided to them is Taka 30,00,000/=. Supply of milk from 1973-74 to 1986-87 is 9 crore litres ~~worth~~ worth Taka 41 crore. The milk products sold by these societies during the period is Taka 97 crore. These primary societies are federated with BJDUKSU Ltd. The working condition of this Federated Union is as follows as on 30.6.87:-

|  |    |                  |
|--|----|------------------|
| (1) Total number of affiliated societies | -- | 258              |
| (2) Paid up share capital                | -- | Tk. 21 lakh      |
| (3) Loan outstanding                     | -- | Tk. 2637.43 lakh |
| (4) Total loss                           | -- | Tk. 2146.56 lakh |
| (a) Interest                             | -- | Tk.1081.32 lakh  |
| (b) Depreciation                         | -- | Tk. 701.23 "     |
| (c) Tax                                  | -- | Tk. 364.01 "     |
| (5) Assets - (a) (i) Book value          | -- | Tk. 1775.41 lakh |
| (ii) ( Market value)                     | -- | " 5000.00 lakh   |
| (b) Development expenditure              | -- | " 163.17 lakh    |

(6) (a) Asto Dairy Plant:

The Asto Dairy Ltd. a private dairy at Tejgaon, Dhaka with a capacity of 5000 litres per day (which was taken over earlier by the Bangladesh Cooperative Marketing Society Ltd. in 1967), was also merged with Eastern Milk Producers Coop. Union (EMPCUL) on July 1, 1973. The EMPCUL, thereafter started collecting, processing and marketing of milk from January, 1974. But due to some difficulties both internal and external the institutions could not be run successfully. The plants were thus incurring losses. The EMPCUL, thereafter, had to assume substantial financial liabilities of their account carried over from previous years.

(b) Dairy Plants:

The capacities of plants along with their dates

of commissioning are shown as under :-

| Sl. No. | Name of plant.                 | Maximum capacity in litres. | Date of commissioning |
|---------|--------------------------------|-----------------------------|-----------------------|
| 1       | 2                              | 3                           | 4                     |
| 1.      | Manikganj Chilling Centre.     | 10,000 litres.              | September, 1975       |
| 2.      | Tangail Chilling Centre.       | 10,000 litres.              | June, 1977            |
| 3.      | Faridpur pasteurisation plant. | 25,000 litres.              | December, 1977        |
| 4.      | Baghabarighat dairy plant.     | 50,000 litres               | November, 1976        |
| 5.      | Dhaka Market dairy.            | 60,000 litres.              | May, 1976.            |

The function of Manikganj and Tangail Chilling centres is only to chill the raw milk to be procured from localities through primary Co-operative and to send the chilled milk to Dhaka dairy with the help of carrying tankers for processing at Dhaka. Faridpur pasteurisation plant pasteurises the collected milk and send that to Dhaka Market dairy for final processing. The Dhaka market dairy in its turn processes the milk collected from different plants and transforms them into various products such as, liquid packet milk, flavoured milk, ice-cream, Ghee, etc.

The Baghabari dairy plant procures the raw milk from surrounding areas through village milk societies and processes the same in the form of full cream milk powder (FCMP), Skimmed milk powder (SMP), butter and ghee. During flash season when the quantity of milk supply increases certain quantity of raw milk collected at Manikganj and Faridpur is sent to Baghabarighat dairy plant for processing.

- (7) (a) No. of executives . --- 49  
 (b) No. of employees --- 373

(8) Performance in Marketing during 1985-86 & 1986-87 :

|                                 | <u>1985-86</u> | <u>1986-87</u> |
|---------------------------------|----------------|----------------|
| i ) Liquid milk (litre)         | 56,31,371      | 53,07,962      |
| ii) Flavoured milk (pound)      | 5,30,430       | 7,10,016       |
| iii) Ice-cream (litre)          | 49,895         | 42,254         |
| iv) Chalk-bar (Nos.)            | 1,32,292       | 1,04,891       |
| v ) Butter (pound)              | 2,94,070       | 3,29,655       |
| vi) Full cream milk powder (Kg) | 17,304         | 33,789         |
| vii) Ghee (Kg) ---              | 2,783          | 8,161          |
| viii) Skimmed milk powder (Kg)  | 1,336          | 1,00,030       |
| ix) Cream (pound) --            | 1,610          | 9,870          |

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5. PROBLEMS:

i) Out of 258 primary milk producers cooperative societies with membership strength of 35,000 members and share capital of Tk. 18,50,000 and saving deposit of Tk. 5,33,000 only 165 societies are availing cattle development loan of Tk. 30 lakh whereas from 1973-74 to 1986-87 alone the members supplied 9 (nine) crore litres of milk worth of Tk. 41 crore. If the members would have been saving at least 1% of the value of their milk the total saving should have been Tk. 41 lakh but the saving is only Tk. 5,33,000/=. This clearly indicates that spirit of cooperation did not work, mobilisation of saving did not take place and effective utilisation of credit was not ensured.

ii) The Federal Union has share capital of Tk. 21 lakh approximately, but the Union could never pay any dividend to the members; but share capital has already usurped as against accumulated loss.

iii) The total development loan amount of Tk. 2637.43 lakh of which 800.29 lakh represents foreign loan still remain unpaid whereas as against this loan the investment value (book value) is around Tk. 1775.41 lakh only but the market value of the investment i.e. Lahirimohanpur plant in Pabna, Asto Dairy plant at Tejgaon (Dhaka), chilling plants & in

Manikganj and Tangail, pasteurisation plants in Faridpur and Mirpur (Dhaka) will be around Tk. 5000.00 lakh. This base could have been run as profit earning concern had it been rationalised and managed by the right type of people with commercial outlook and industrial acumanship in stead making it an exercise affairs for the government bureacracy.

iv) There are more than 80,000 agricultural primary cooperatives all over the country with 70 lakh farmers. If 70 lakh farmers are provided with cattle or cattle loans to rear cattle for milk and meat, the production of milk and meat will increase. The cooperative net-work has not been used as such.

v) Neither the government nor the Federal Union and the Livestock Ministry could ever since undertake national survey and evaluation and prepared any long term perspective plan for attaining self sufficiency in protein.

vi) There is no specific government policy for development of dairy industry indicating the role of public sector vis-a-vis Cooperative sector and private sector ~~according~~ according to the Constitution of the Country.

vii) All over ~~ha~~ the world dairy industry is heavily subsidised by the government. Imposition of tax on sales of milk and milk products has made it difficult for the cooperatives to compete with private sector.

## 6. PROSPECTS:

(i) It is estimated that the present import of milk and milk products cost US\$ 50 million annually and this import bill in course of next five years will go up to the order of US\$ 250 million. In order to save this huge

foreign exchange ~~xx~~ and also to augment production in the country and generate employment opportunity it is necessary to organise Primary Milk Producers Cooperatives in every Upazila (Sub-district) with units in different milk pockets to make the Society viable and ~~x~~ federate them with the existing National Milk Federal Union. The Federal Union will have to set up ~~x~~ chilling units and pasteurisation plant in every district headquarters to procure milk from the ~~Upazila~~ Upazila primary cooperatives and supply liquid milk to the district town population and other consumers of the district. The Federal Union will have to set up powder making plant in Divisional Headquarters i.e. Rajshahi, Khulna and Chittagong to supply canned and tinned packed milk and milk products to the consumers at large all over country. It is estimated if 70 lakh farmers from their individual cattle farm supply at least 10 Kg. milk daily the total production will go up to the order of 700 lakh Kg.

ii) If people are ~~x~~ motivated to take milk and milk products and supplied in the market at reasonable price people will develop habit to drink milk instead other drinks.

iii) If people are motivated to undertake cattle farming for their economic benefits people will do so provided they are supplied with inputs and Credit Support.

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7. CONCLUSION.

The white revolution brought about in India by the dairy Cooperatives is an excellent example. The B.J.D.U.K.S.Union Dtd. will be induced to cooperate and collaborate to undertake a development Plan with governmental and Inter-governmental fund supports.

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A BRIEF INTRODUCTION OF CHINA DAIRY

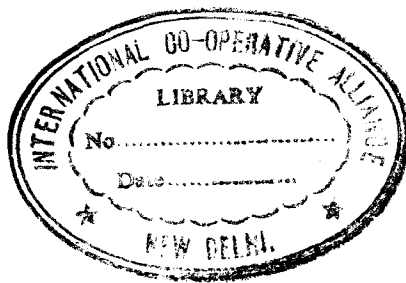
AND

SURVEY OF FUJIAN COOPERATIVE DAIRY DEVELOPMENT

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## 1. A SURVEY OF DAIRY DEVELOPMENT IN CHINA

Under the guidance of reforming and open policy, milk production has taken on a new aspect of coexistence of state-run, collective, individual. Milk production in state-operated dairy farms gains steady, healthy development. Dairy families, villages and integrated bodies spring up over the nation like mushrooms. By the end of 1986 the country has 1.84 million dairy cows which is 2.25 times as many as in 1982. The total milk output increases by 76.5 per cent over the 1982, it reaches 2.86 billion litres. Milk quality and average annual milk output for each cow increases distinctly, e.g. in the eighth dairy farm of Shanghai, each one can produce 8,000 litres of milk a year, which is the record output for large-scale cow raising in China. The country has 700 high-yield dairy cows each able to produce 10,000 litres of milk a year, and it is also raising 1 million head of high-grade Jersey milk cows.

At present, 22 provinces (regions) have set up milk cow associations which are playing an important role in dairy development. It is estimated that in China the total number of dairy cows will increase to 4 million head and its annual milk output will be 6 billion litres by 1990.

## 2. BRIEF INTRODUCTION OF DAIRY DEVELOPMENT IN FUJIAN PROVINCE

Like other area in China, Fujian dairy develops rapidly since pursuing reforming, open policy, the province now has 25,000 milk cows, the average annual milk output for each cow is 3,000kgs, marketable milk is 45,000MT a year. There are breeding centres and veterinary centres all over the province, being in charge of breeding, prevention and cure, to sustain dairy development. The province plans to increase the number of its dairy cows to 30,000 head and average annual milk output for each cow to 35,000 kgs by 1990.

In capital city Fuzhou there are 9,510 dairy cows, 96.85 per cent of them are raised by individual, its annual milk output is 18,600 MT, and 150,000 bottles of processed, sterilized milk on sale every day in 1986. The city plans to set up a modernized demonstration dairy farm, including milking machines, embryonic implantation and so on.

### 3. FUJIAN COOPERATIVE DAIRY

#### 3.1. Brief Introduction of Fujian Supply and Marketing Cooperative (FSMC)

There are 4.21 million farmers, 100,000 staffs and employes, and more than 30,000 running units in FSMC, which is the leading factor in Fujian rural commerce and is under the leadership of National Supply and Marketing Cooperative Alliance. FSMC offer multiple services in agricultural production, purchasing, marketing, processing, storage, transportation and information, and under the guidance of national policies, plans to serve farmers and different rural economic units to develop agricultural by-products production. There are seven corporations and a trade centre directly under the FSMC, they are: Native Products Corporation, Tea Corporation, Fruits and Nuts Corporation, Bamboo Wood and Charcoal Corporation, Agricultural means of Production Corporation, Commodities and Waste Materials Corporation, Agricultural and Sideline Products Import and Export Corporation.

#### 3.2. A Survey of Cooperative Dairy Development

The Agricultural Department has been running and in charge of Fujian provincial milking industry for many years. Cooperative Dairy comes into being recently and in the course of probe and growth. Guanton Supply and Marketing Cooperative of Lianjiang County has made a good attempt in cooperative dairy development.

Guanton town is located by the port of Ming River, with a temperate climate, lush pasture, it is a natural good place for raising milk cow.

In a long period of time, milk production remained undeveloped, the main problems are: farmers lack fund, sales volume is limited, backward raising technique, low output, poor economic benefit. To solve these problems, Guantou Supply and Marketing Cooperative (GSMC) goes deep into dairy families to investigate and study, and arouse farmers to develop milk production. Based on GSMC farmers organize themselves to set up a dairy cow raiser association which is raisers' self-service cooperative economic organization. Its characteristics are: dairy farmers manage independently, adopt sole responsibility for their profits or losses, raise funds to run association, with mutual aid and benefit, and offer the services of fund, technique, storage, purchasing and marketing etc. The association has nine leading members, seven of them are farmers and two come from GSMC, the cooperative's staff holds the president position and two farmers hold the vice president position of it, and work out the constitution of the association. As for the detail, see the copy of "The Constitution of Dairy Cow Raiser Association of Guantou Supply and Marketing Cooperative".

With the establishment of the association, the farmers' enthusiasm of raising dairy cow are greatly aroused, a great advance is brought about in dairy cow production. In 1984, there were only 36 dairy families all over the town, are being upped to 145 in 1987. The number of its dairy cows increases from 42 to 350, purchasing quantity of fresh milk per day increases from 400 kgs to 1500 kgs. The association mainly offer dairy farmers the following services :

a. To offer fund service

The association takes out part of supporting and expanding funds from the GSMC, assure the dairy families to get some bank loan, so by raising funds of RMB ¥ 360,000 from various circles. The farmer can get a loan of RMB ¥ 1,500 by buying per cow. Up to now the association has given aid to 110 dairy families, among

them four families owned more than ten cows respectively, the record one owned fifteen cows. By contact with Fuzhou dairy plant, GSMC gives aid to farmers in fund, the loan discount for each cow is RMB ¥ 70 in the first year.

b. To offer technical service

The association lays stress on technical training and guidance, not only frequently send persons to go deep into dairy families to generally investigate the health of the dairy cows but also conduct technical training courses. Experts, famous veterinarian, head of the veterinary centre are invited for lecture of scientific raising, of disease prevention and remedy. Besides, a veterinarian from the veterinary centre is engaged as a concurrent surgeon of the association, specializing in remedy of dairy disease.

c. To offer fine-breed dairy cow service

To solve the problem of difficult purchasing dairy cows of fine breed per family, the association send experienced dairy cow raisers to Shanghai, Zhejiang province and Putian, Xianyao of Fujian province to purchase dairy cows of fine breed for the need of dairy families so that farmers are able to buy dairy cow at the place in question without spending travelling expenses, time rushing about.

d. To offer fodder service

To further the development of Guantou dairy production, to increase the annual milk output per cow, it is necessary to further enlarge the feed sources in spite of its grassy land. Besides purchasing and transferring bran etc. from other area for supply, the association plants Mexico maize and 'reed grass', it is expected for expanding after its success.

e. To provide marketing service

Years ago, the farmers had to go as far as Tinjian or Fuzhou to push the sale of milk. Consequently, the association came to

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Fuzhou Dairy Plant(FDP) and get the support, with the joint investment of RMB ¥ 70,000 by the GSMC and Fuzhou Dairy Plant and the equipment provided by the FDP, a dairy purchasing station with the freezing tin of 5,000 kgs capacity was built, and effected purchasing, storing and regulating on the very spot. As a result, the marketing problem was tackled and the milk quality was guaranteed.

f. To provide social insurance service

The association also established the dairy mutual aid agency, collecting assistanship. Every participant should pay monthly dues RMB ¥ 2 for per cow while at the same time enjoy the following favours : a subsidy of RMB ¥ 1200 for a dairy cow that died of irresistible reasons, a 10% of subsidy for an ill cow that took medical expenses RMB ¥ 50-100, a 20% for more than 100 yuan. The favours helped the farmers diminish the losses caused by the illness or death of cows.

The establishment of the Dairy Cow Raisers Association tremendously enhanced dairy production in Quantou Town. It is estimated that the town will supply FDP 800 tons of fresh milk this year and the farmers will get an income of RMB ¥ 440,000, some individuals could even have about RMB ¥ 10,000 . The GSMC, in the course of the service to the farmers expanded its own scale of management and strenthen its own enterprise as well, 210 tons of fresh milk in the period from Jan. to June was purchased in Quantou Town, the purchasing quota exceeded 110,000 yuan, that covered 10% of the agricultural and sideline products purchasing volume, realizing a profit of about 10,000 yuan. Therefore, it's just for the only item of purchasing milk that a profit of 10,000 yuan could be realized this year. The development of dairy production in Quantou has great potential. Lately, the authorities of the Town have put forward a proposal that the number of dairy cows should be increased to 1000. Now the association is sparing no effort to bring the plan into success.



### 3.3. The existing problems and prospects

#### Problems :

a. The cooperative dairy is a field of newly developed economic service with its limited scale, inexperience, slim foundation and less competitiveness.

b. The dairy varieties and feeding technology are still in the process of improvement. The annual output of every cow still remains very lower ( an average of 3200 kgs). So an introduction of improved varieties and advanced technology stands in need.

c. The inspection methods are backward. Most of the purchased milk could not meet the national standards. The feeding conditions of the individual dairy farmer are in poor state, and want for freezing equipment. In addition, milk quality is affected and even deteriorated with adulterating and mingling.

#### prospects :

a. Fujian is good market for milk. For a long time, there is short of milk supply in Fujian, the contradictions between supply and demand remain distinct in such cities as the provincial capital Fuzhou, Amoy, Shanmin etc. In the countryside, milk is also in great demand, that shows the way for the development of the dairy market.

b. A good foundation for further development of dairy production. Good climate and appropriate sloping fields in Fujian appeal to herbage, forage and green feed. Today the total number of dairy cows is 25,000 head in Fujian.

c. Cheap labour and successful experience for the local cooperative dairy development in the counties of Lianjiang and Sha Perceive promising prospects for Fujian cooperative dairy.

d. FSMC stresses its aim of expanding the service of dairy industry, by organizing the power of the departments concerned. In view of the conditions, the FSMC provides the necessary facilities that proceeds from producing to marketing for individual dairy farmers.

e. With the help of the policy of opening to the outside world and the involvement of the International Cooperative Alliance, we could establish friendly ties and economic cooperation with the countries and regions concerned to promote the cooperative dairy development.

THE COOPERATIVE DAIRY DEVELOPMENT

OF YILI IN XINJIANG

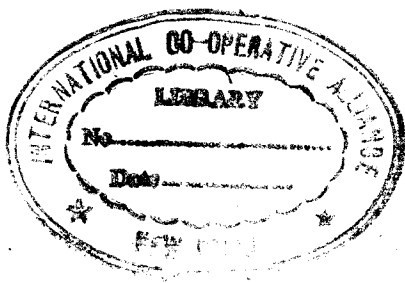
(CHINA)

BY

ZHOU JUN

in Xinjiang SMC,

Urumchi, China



THE COOPERATIVE DAIRY DEVELOPMENT  
OF YILI IN XINJIANG, CHINA

YiLi Area is in the North of Xinjiang Uygur Autonomous Region, the agricultural and animal husbandry bases of Xinjiang in where there are more than 67,000 tons milk per year, and 60% of the total milk are consumed by the farmers and herdsmen themselves, the rest about 26,800 tons are supplied to the cities or towns and processed into the milk products.

But a few years ago the milk and the milk products in the cities were always in short supply. How further to supply more the milk and milk products to the cities and How continuously to increase the income of the farmers and herdsmen would be a difficult question and a important question.

In keeping with the policy that the state can give the collectives a free hand in runing enterprises in many areas of production and construction, in ~~recent~~ years, the supply and marketing cooperatives in YiLi Area take as one of their major tasks to promote the cooperative dairies with purchasing, storage, transport, processing and marketing, and they have built some small-scale and middle-scale dairies over the counties of YiLi Area, which are able to process milk about 215 tons daily.

The cooperative dairies have rapidly developed

...2...

in YiLi Area, but between the rural areas and the pastoral areas there are some differences on the economical efficiency, such as Nileke county and Yining country.

Nileke county is a typical county of the stockraising, in where the natural grazing grounds about 15,488 million mu covers 60.5% of the total area and the population only keep about 15,000 people. At present there are four cooperative dairies in the county, their processing capacity are about 50-60 tons daily. Since 1986 the dairies produced the powdered milk about 714.5 tons, and herdsmen in the county increased the total income of more than 1.9 million yuan from selling their milk, each of herdsmen in the county averaged 44.53 yuan. According to their processing capacity, the dairies oughted peryear to process milk about 14,000 tons, but they only processed milk about 3,500 tons. Why?

Because the most of herdsmen in Nileke county are still used to moving about in search of pasture and with the change of the seasons they drive their herds to the grass grounds changing with the seasons. therefor, the places of supplying milk are very scattered and dairies are not able to serve them in everywhere, so a lot of milk can not be collected to result in that the

cooperative dairies are difficult of development in the pastoral area.

To compare with the pastoral areas, ~~the pastoral areas~~, the cooperative dairies in the rural areas have been developing rapidly because the rural areas have many superiorities:

At first, the labour forces are enough to <sup>the</sup> needs of breeding many milk cows, a variety of fodders are able to meet peasants' needs of breeding milk cows in the cowsheds; the second, the rural areas are generally near the cities or towns, where are the main outlet of the milk and the milk products, meanwhile, the milk producers are able to get a lot of technical services, market and scientific information from the cities or towns to guide and help their breeding by individual households.

Yining county is a agricultural county, in where the production of milk are 148.2 tons daily. The total milk procured perday in the SMC of Yining are about 60 tons, in which about 40 tons are sold to the cities and other counties and the rest generally are processed into the milk powder in a middle sized cooperative dairy which can process milk about 20 tons daily.

The management of the dairy: Everyday 1600-1700 milk producers deliver their milk to the dairy. From

January 1987 to September the dairy has processed milk about 5,387.4 tons, produced milk powder of 707.52 tons, made the value of output of 3.5376 million yuan and the net profit of 0.536 million yuan. Since the dairy went into operation in June 23, 1986 the dairy has returned the loan and interest about 0.65 million yuan, and the milk producers increased their income about 2.9984 million yuan, such as one of the milk producers Gamusha, he bred 13 milk cows and increased his net income of 6000 yuan from selling milk.

The stations of collecting milk: Ensuring a supply of quality and quantity of milk from the milk producers were two problems in the dairy since some of milk producers always added water into the pure milk and some of milk producers faced distance problem which required they spent a lot of time and ran about 40km and 50km to deliver their milk to the dairy, this was not possible for them. Therefore, sometimes the dairy was not able to procure enough high quality milk for processing. How did the dairy tackle the problems?

Now the dairy has set up the fifty stations of collecting milk over the Yining county. Every morning and evening the milk cows to the near station

...5...

and milk cows, then the testors test their milk and record the quality and quantity of their milk. In the end of every month the dairy pays the price of their milk according to the record.

To set up the stations of collection milk over the county is a very good manner because this manner can ensure the quality and the hygiene of the milk supplied by the milk producers, meanwhile it is able to use manpower and material resources of the milk producers sparingly.

Before setting up the station of collecting milk, the fat content of the milk procured always were between 1.5-2% and processing one ton of milk powder needed 8.2 tons milk, but now the fat content of the milk are improved to between 2.8-3.5% and processing one ton of milk powder need 6.5-7.2% tons milk.

To the milk producers who have signed the contract supplying milk with the dairy, the dairy gives them some favourable terms such as loan, price, fodder, transport etc. Therefor, although the most of the milk producers are not the member of the SMC, they actively deliver their milk to the dairy.

The goverment support:

The cooperative dairy development of the SMC

...6...



of Yining county is always supported by the government, and the banks and the credit cooperatives provided a large loan to the peasants for buying the milk cows, such as following figures:

| <u>No.</u> | <u>Item</u>                        | <u>1986</u> | <u>1987</u> | <u>1986-1987</u> |
|------------|------------------------------------|-------------|-------------|------------------|
| <u>1.</u>  | Loan of banks<br>*in thousand yuan | 46*         | 270         | 316              |
| <u>2.</u>  | Loan of credit cooperatives        | 442         | 367         | 809              |
| <u>3.</u>  | Bought cows                        | 650         | 484         | 1134             |

\*\*\*\*\*

How would the peasants return their credits and interests? From the second year that they have accepted the credits, they can return their credits by their milk and calves according to the market price. The peasants who have signed the contract of supplying milk with the cooperative dairy, whose interest of the credits will be paid to the banks and the credit cooperatives by the cooperative dairy.

Future plans:

In accordance with the needs and wishes of the peasants, the SMC of Yining county is going to extend a new dairy to increase the processing capacity from 20 tons to 70 tons and improve the fat content of the milk powder from 18% to 25%.

The major tasks of the cooperative dairy development:

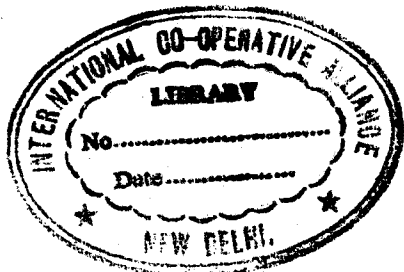
To develop a series of service for the milk producers, and bear the tasks to deliver technical guidance and process and market the milk and the milk products for the milk producers.

To develop milk production and make full use of updated technology to increase the variety of the milk products and to improve the quality of the milk products.

To rely mainly on the rural areas and supplement it with the pastoral areas so as to promote the cooperative dairy development rapidly in Yili.

All these the quality of efforts are designed to meet the peasants' growing material and cultural needs.

"COOPERATIVE DAIRY DEVELOPMENT IN INDIA - ITS PROBLEMS AND PROSPECTS"



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India is the 7th largest country and biggest democracy in the World, Well marked off from the rest of the continent by mountains and sea, the peninsula stretches over an area of 32,87,782 Sq. Kms. with a distinct geographical entity between latitudes 8°4' and 37°6' North and longitudes 68°7' and 97°25' East.

The main land comprises of four well defined regions, namely, the great northern mountain Zone, the Indo-Gangetic Plain, the Western Desert and the Southern Peninsula. The country is adjoined by China, Nepal and Bhutan in the North, in the East lies Bangladesh while Afghanistan and Pakistan border the north-west front. Below the tropic of cancer, the peninsula tapers off into the Indian Ocean with the Bay of Bengal on the East and Arabian Sea on the West. India is administratively divided into twenty-five States and Seven Union Territories.

According to 1981 census, the population of India was 683.6 million indicating an increase of 24.73% over the last decade. About 80% of the total Indian population lives in 6,30,000 villages. A large majority of agricultural holdings are scattered and tiny with 70% of the operational holdings being less than 2 hectares in area. All the small and marginal farmers (having land holdings less than 2 hectares), tenants, share croppers, landless agricultural labourers and rural artisans can be grouped under rural poor.

The description of the Indian scene will not be complete without mentioning some of the positive gains. For instance, Food production has almost doubled as compared to the base of the First Five Year Plan and industrial production has almost quadrupled. There has been considerable overall rise in the GNP and growth of national economy as a whole.

A valuable contributor to the rural economy of India is its cattle wealth which accounts for 18% of the total agricultural output. Some of the well recognised breeds of cattle and milch buffaloes in the world comes from India and a high priority has been given for their development in the national plans. Every small farmer who can do so keeps a pair of bullocks - and every rural household keeps one or two milch animals. The national livestock stocks statistics do not show any significant rise in milch animal population during 1978-1986, though milk production rose from 29.1 million tonnes to 42.3 million tonnes during the period thereby improving the per capita availability of milk.

/(about 36% as breedable females)

Contd.../-

The first dairy society - The Katra Coop. Dairy Society, Allahabad was registered in 1913 in the State of Uttar Pradesh soon after the Cooperative Societies Act, 1912 was passed. Between 1914 and 1919, seven more societies were formed. By the end of next decades, there were 19 milk Union covering 264 societies with a total membership of 11,602. The total milk handled by these societies was 4 million kgs. per year - about 0.1% of milk marketed in urban India. Due to organisational & managerial defects and lack of trained manpower the desired progress could not be achieved. Also the traders & vested interests got into the organisation & once again the producers were exploited. Patronisation of these institutions by certain groups & classes inhibited their democratic growth & this could not attract the participation of the producers.

up

In 1940, the British Govt. in India decided to set up Bombay Municipal Corporation Milk Supply Scheme (later on in 1946 taken over by State Govt., & established a Statutory body known as Bombay Milk Scheme) which purchased a fixed amount of milk from Polson Ltd., a private enterprise at Anand, which in turn purchased milk from milk producers of Kaira Distt. The discontentment grew among the farmers of Kaira District as they had to sell their milk at the price fixed by the contractors. They went in deputation to Sardar Vallabhai Patel (a prominent independence leader and first Deputy Prime Minister) who reiterated his advice that they should market their milk through a Cooperative Society of their own. This cooperative should be genuinely producer oriented and all the benefits should be ploughed back to them, the chain of exploitation must stop. They should refuse to sell their milk to middleman. It was resolved that milk producers societies would be organised in each village of Kaira Distt. to collect milk from their member - farmers. All the milk societies would federate into Kaira Distt. Coop. Milk Producers Union. The structure of dairy cooperatives which emerged in the district was recognised as "Anand Pattern" of dairy Cooperatives. After great hurdles/  
by resistance put in vested interests, the Union competed with Polson, first in Kaira Distt. in the collection of milk from producers and secondly at Bombay in sales in the Bombay Milk Scheme. The Union was very successful in its strategy and by early 1950s obtained the monopoly right of supplying milk to Bombay Milk Scheme from Kaira Distt.

What the Anand Pattern means is quite simple: milk producers of a village are organised into a village milk cooperative managed by their elected representatives. These elected representatives can only be producers. The village societies federate into a district union run by elected representative of the village societies. The Union, in turn, are federated into a State Dairy Federation which is managed by elected representatives of the Distt. Union who, as have been mentioned are themselves elected by the village cooperatives.

Development of dairy has assumed great importance in the economy of the country not only because it provides additional income to small/marginal farmers and landless labour but also because it augments the production of milk and milk products

contd.../-

which are essential items of the diet of the people. The main thrust of dairy development has been organisation of dairy cooperative enterprises which have been responsible for assuring a fair return to the producers without sacrificing the interests of the consumers. Small scale milk production is the distinguishing feature of dairy farming in India. Majority of the farmers in India maintain one or two heads of milch cattle. Emphasis has been placed on milk production in rural areas through a network of cooperatives linked up with processing and marketing of surplus milk in urban areas. Dairy Cooperatives are playing an increasingly important role in dairy development by providing various services like provision of technical inputs for milk production, collection of milk, processing and marketing of milk and milk products.

#### Operation Flood:-

The potential of dairy development for bringing about rapid socio-economic transformation of rural people is immense. The Integrated Dairy Development Project commonly known as Operation Flood has been quite successful. It is being implemented on a three-tier cooperative structure i.e. producers' Dairy Cooperative Societies (DCS) at village level, Milk Unions of these societies at district level and Federation at apex/State level.

The programme has been able to provide all the year round remunerative market for milk produced in the rural milksheds. Simultaneously, it has been able to provide urban consumers a choice of milk & milk products of assured quality at reasonable prices.

The first phase of dairy development programme known as Operation Flood-I designed on the basis of Anand Pattern Cooperatives was aimed at setting up organised milk marketing system in four metropolitan cities - Bombay, Calcutta, Delhi & Madras to be linked with natural milksheds of their respective hinterland. Funds generated from commodity assistance supplied by WFP were spent for implementation of OF-I. On completion of Operation Flood-I in March, 1981 about 10,400 dairy Cooperative societies were established in 27 milksheds covering 1.46 million families. During this period, milk marketing in 4 metropolitan cities rose from one million to 2.2 million litres per day. A much larger dairy development project known as Operation Flood-II was implemented during 1982-85. On its completion by March, 1985 Operation Flood had covered 136 milksheds encompassing 34,523 Anand Pattern village Milk Producers Cooperatives.

OF-III Project involving a total investment of Rs.681.29 crores is to be implemented during the 7th Five year Plan has been approved by the Govt. The basic objective of OF-III is consolidation of gains already achieved, intensify the farmer's organisation work, enrol more members in the existing cooperative societies, organise more dairy cooperative societies, increase milk production & marketing facilities etc. A statement indicating the physical targets of OF-III is given at Annexure-I

Implemented during

Contd.../-

Operation Flood achievements, viewed purely from procurement & marketing angle itself, have given Indian Dairy Industry a new direction. Without Operation Flood, traditional milk trade would have monopolised the urban markets with uncertain quality of milk at higher price and there would have been no incentive to the rural milk producers in the project area already covered - mainly landless agricultural labourer and small and marginal farmers - to produce and market more milk - and would have denied them an opportunity to increase their income. A stage would be soon reached where rural milk producers would have direct access to all major milk markets of the country and thereby enabling them to produce more milk with adequate procurement and technical inputs backup through their own cooperative organisation. The State Govts. have been impressed upon by the Govt. of India to improve upon the need for holding timely & regular election of Cooperative Organisation. Govt. have constituted a Committee to examine the various cooperative societies Acts & suggest suitable guidelines for legislative action.

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ANNEXURE-I

STATEMENT INDICATING PHYSICAL TARGETS FOR OPERATION  
FLOOD PHASE-III DURING THE 7TH FIVE YEAR PLAN I.E.  
UPTO 1989-90.

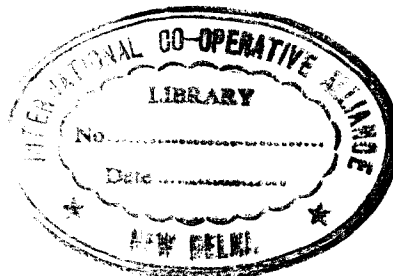
| Sl. No. | Particulars  | Achievements on March, 1985 (Cummulative) | Total Targets 1985-90 (Cummulative) |
|---------|--|---|-------------------------------------|
| 1.      | No. of Milksheds   | 136                                       | 173                                 |
| 2.      | No. of Dairy Cooperative Societies('000)                               | 34.50                                     | 50.00                               |
| 3.      | No. of Dairy Cooperative Societies under Artificial Insemination('000) | 7.50                                      | 25.00                               |
| 4.      | Milch animal under Cooperative ambit(million)                          | 5.45                                      | 15.28                               |
| 5.      | Rural Milk procurement(mlpd) * (peak)                                  | 7.90                                      | 18.33                               |
| 6.      | Milk Producers families covered (million)                              | 3.63                                      | 8.00                                |
| 7.      | Urban Milk Marketing(mlpd) *   | 5.01                                      | 12.42                               |
| 8.      | Rural Processing Capacity(mlpd) *                                      | 8.79                                      | 20.00                               |

\*Million litres per day.

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DAIRY DEVELOPMENT THROUGH  
DAIRY COOPERATIVES IN INDONESIA RURAL AREA

PAPER COUNTRY  
INDONESIA



TO BE PRESENTED ON

ICA / NCUI / NDDDB REGIONAL

TRAINING COURSE ON COOPERATIVE DEVELOPMENT

ANAND : : 6<sup>th</sup> - 19<sup>th</sup> DECEMBER 1987



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DAIRY DEVELOPMENT THROUGH DAIRY COOPERATIVES  
IN INDONESIA RURAL AREA

PAPER COUNTRY INDONESIA

I. INTRODUCTION.

Indonesia has a population of about 162 million with a total land area of about two million km<sup>2</sup>. It consists of over 3000 inhabited islands. The main islands are Sumatera, Java, Kalimantan, Sulawesi and West Irian.

Java which has only 6,6% of the total area, inhabited by almost two-thirds of the Indonesian population. At about 30% of the total population live in rural areas and about three out of four rural inhabitants depend on agriculture for their livelihood.

The agricultural land area comprises 41% of total land resources which is mainly for rice production. There are about 17 million farmers who cultivate about 19 million hectares agricultural land. The system of agricultural production in Java is very intensive and all agricultural land is being fully used.

In the other large islands however considerable land reserves are available and in many cases only very extensive methods of production are used. A great effort is being made to transmigrate families from overpopulated regions to the areas with low population density.

There are about 6.7 millions of cattle, 2.5 millions of buffaloes, 4.3 millions of sheep, 8.1 millions of goats, 3.3 millions of pigs, 177.1 millions of chicken and 25.4 millions of ducks.

Total number of people working in livestock industry is about 6.000.000.

The current " The Fourth Five Year Development Plan (Palita IV ) " for the period of 1984 - 1988 still concentrate in the agriculture field, with the aim :

- a. To achieve self sufficiency in food.

- b. To provide labor opportunity.
- c. To increase the income of the farmers.

## II. PRESENT SITUATION AND DEVELOPMENT OF DAIRY INDUSTRY.

### a. Dairy cattle population and production.

At present there are about 197,000 heads of dairy cattle owned by about 66,000 small holders dairy farmers.

Total milk production is about 454,000 liters per day. This local milk-production is only 30 % of the countries total consumption of milk and-milk products.

More than 700,000 tons of milk equivalent per year is still imported Costing the country over US \$ 75 million in foreign exchange.

It is still expected that the demand for milk will increase due to the growth of the human population as well as due to the improvement of the average income per capita.

### b. Government effort to develop dairy industry

During the " Third Five Year Development Plan " the Government has made serious effort to increase local milk production in order to reduce the gap between local milk production and importation of milk and milk products, as well as to create employment and increasing rural income.

The Government has formed an organization as an implementing body in which the members coming from several ministries which are working together to assist Dairy Cooperative activities. This regulation is named The President Decree No. 2, 1985.

The implementing body is formed at central level and at provincial/district level.

At central level the Dairy National Board is formed, assisted by a technical working group to carry out daily activities.

The board consists of inter ministriat personnels, from Min of Agriculture, Min of Home Affairs, Min of Industry, Min of Trade, Min of Cooperatives, Min of Health, Junior Minister for increasing of the utilization of -

the local production, Junior Minister for Increasing of Livestock and Fishery Production, Coordinator of Investment Board.

This Board act as a centre of coordination and policy making.

At provincial/District level.

Dairy Local Board is formed which consists of members representing Government organization such as members from livestock Services, Provincial and District Administration, Provincial Industrial offices, Co-operative Services, members from Bank Institutions, Farmers Association.

This local Board is responsible for the implementation and Supervision of the project at Provincial and District level.

The Scope of activities of the project includes :

- Supervising the cooperation between Dairy Cooperative and milk Industry in marketing of the milk.
- Importation of Dairy Cattle.
- Improvement of Dairy management through extension programme.
- Improvement of genetic merit of dairy cattle through artificial insemination.
- Utilizing the potential of existing commercial milk plant to process and buy the milk from the dairy cooperatives.
- Provision of soft loan with a simple procedure by credit institutions.
- Strengthening of diseases control institution.
- Improvement of Dairy Cooperative ability in handling, processing of the milk and also in maintenance of dairy equipment.

#### c. Marketing System;

The milk produced by the farmers is collected and cooled in the collecting centers, organized by the primary cooperatives.

The cooperatives sell of about 85 % of these milk to the processing plant and the rest 15 % goes direct to the local consumers.

The primary dairy coop and the union have 5 Milk Treatment Plants which produce chilled and pasteurised milk

The milk is sold to the processing plant on a contract base and the price is negotiated by the Union Dairy Cooperative with the Association of milk Processing Plant.

At present there are six milk processing plants in Java actively engaged in this marketing system.

Regarding to the list of Priority Scale in the year 1985 from Government ( Investment Board Coordinator ) that dairy coop bussiness should be involved in the establishment of new milk indutry. Union Dairy coop nowaday has a joint venture with private companies for new milk plant and feed milk factory.

On 21 July 1982 the Government issued " Three Joint Ministers Decree " which arrange the ratio of importation of milk product with the absorption of local milk by the milk processing plants.

#### d. Provision of input.

Two kinds of input is provided for the development of dairy industry.

1. Government input.
2. Dairy cooperatives input.

Government input is a non profit activities with the aim of stimulating the auto activity of the farmers, financed by the national development budget and regional development budget and other resources such as foreign aid.

Government development budget is provided at the earlier stage for the small cooperatives to help them to be able to run the cooperatives on their own. After wards credit facilities from the Government Bank and from the milk factories will be used.

The main activities involved :

- a. Importation of dairy cattle supported by mass guided credit programme.
- b. Strengthening extension activities, i.e. training programme for key - farmers and for extension workers, intensifying extension in artificial insemination, diseases control etc.
- c. Strengthening of the management of the dairy cooperatives, its organization and providing facilities for farmers mostly for post harvest - activities, i.e. milk collecting centres, milk transportation, chilling and milk pasteurizing units, milk cans etc.

The dairy cooperatives.

In 1977 there were only 2 primary Dairy Cooperatives but at the end of 1986 there has been already 173. Annex 1 will show the development of dairy cooperatives.

The activities of the cooperatives could be divided into two main activities :

1. Pre harvest activities.
2. Post harvest activities.

1. Pre harvest activities;

The activities at this stage are :

- Improving the cooperative facilities in serving the farmers i.e. recruitment of experties ( veterinarian, and livestock engineer ), Technician ( inseminator, and paramedis ) etc.
- Establishing training facilities for farmers in the concentrated production areas.
- Improving feed supply by transferring agri-waste conservation technology and processing technology such as to make silage and hay. The union has 1 feed milk factory to serve the member needs.
- Improving dairy management of the farmers.

2. Post harvest activities :

The activities at this stage are :

- Improvement at milk collection and distribution system by establishing milk collecting subcenters and milk treatment ( for chilling and pasteurizing ).

- Increasing the value of the milk by processing it in to caramel, yoghurt, cheese which could be operated as home industry.
- Improving the marketing of the milk by direct selling of pasteurized milk to the consumers.

The impact of the activities is shown in annex 1.

There are three limiting which influence the milk demand :

1. Economic growth.
2. Price of milk and milk product.
3. Consumers preference to milk.

To increase demand for milk, promotion of milk is needed continuously.

During 1970 to 1978 the milk industries has been successfully promoted the use of milk and milk product for human need, ie. promotion of sweet condensed milk, powdered milk and sterilized milk (UHT milk).

At the end of PELITA IV, the Government has projected the ratio of local milk production to imported milk is 1 : 1. Until now the ratio is 1 : 2.

To achieved these projection, 3 aspects must be considered :

1. Supply aspect which related to population and production drive.
2. Market aspect which related to processing (by milk factories and dairy cooperatives) using advanced processing technology or traditional simple processing technology which could be done by cooperatives or home industries.
3. Milk price aspect to consumers income.

At present the price of imported milk product is only about Rp. 225,- /liter, and the price of local fresh milk is about Rp. 355,- to Rp. 395,-/liter.

But if these prices is compared with the price of finish milk product to consumers which is Rp. 650,- for SCM and Rp. 1.100,- for UHT, the price structure are still not balanced.

Those imbalanced price structure influence the demand for milk as shown in Annex 2.

To improve the imbalance price structure, the Government through "Three Ministry Decree" and "President Decree " will launched a massive study covering producers and consumers.

### III. MAJOR PROBLEMS IN DAIRY DEVELOPMENT.

Major problem in dairy development which are encountered by the Government of Indonesia namely in the field of production, processing and marketing activities. The details of which are as follows :

In production activities :

- Lack of knowledge and skill of farmers in dairy farming and in farm management.
- Lack of knowledge and skill of the personnel of the cooperatives in management, bussiness and administration.
- Inadequate personnel in the cooperatives to serve the farmers such as Veterinarian, animal husbandry engineer, paramedis and inseminator.

In the field of processing :

- Lack of dairy technologist.
- Lack of knowledge and skill in maintenance of the equipment.
- Lack of processing facilities.

In the field of marketing :

- Lack of knowledge and skill in the promotion of milk.
- Lack of distribution/transportation facilities.

To cope with the above mentioned problems the following measures are recommended to be taken :

- Strengthening of the extension activities.
- Training of personnel in the training centre and in the field which can be conducted at the dairy cooperative and at the milk industry.
- Recruitment of veterinarian, Animal Husbandry engineer, paramedis and inseminator.
- Providing facilities for milk handling and milk treatment.
- Establishing of milk industries and feed Milk Factories.

At present there have been two training centres established, one in Songgoriti and another one in Baturaden which is used to train farmers and Government personnel in the field of dairy farming and farm management.

It is still proposed to establish another centre which can be used to train personnel in theory and practical purposes.

### IV. DAIRY DEVELOPMENT PROJECTION 1987- 1988.

Figure 1 will show projection of dairy population, production and milk consumption 1987-1988 to achieve 1:1 ratio of local milk production to imported milk, at the end of Pelita IV ( 1988 ).



Figure 1 : Projection of Dairy Population, Production and Milk Consumption  
1987 - 1988.

| No. | I T E M S                                   | Projection  | 1987           | 1988           | Annually<br>increase<br>1984-1988<br>( % ) |
|-----|---|-------------|----------------|----------------|--|
| 1.  | Production (brutto)<br>( 000 tonnes )       | High<br>Low | 447,1<br>409,2 | 603,9<br>352,8 | 34,7<br>33,0                               |
| 2.  | Production (netto)<br>( 000 tonnes )        | High<br>Low | 402,4<br>368,3 | 542,2<br>478,3 | 34,8<br>32,9                               |
| 3.  | Milk Import<br>( 000 tonnes )               | High<br>Low | 439,7<br>459,0 | 443,0<br>390,8 | ( -7,2 )<br>( -8,6 )                       |
| 4.  | Milk Consumption<br>( 000 tonnes )          | High<br>Low | 842,1<br>827,3 | 985,2<br>869,1 | 6,6<br>5,2                                 |
|     | a. Fresh milk consumption<br>( 000 tonnes ) | High<br>Low | 80,5<br>73,7   | 108,5<br>95,7  | 34,7<br>33,0                               |
|     | b. Processed<br>( 000 tonnes )              | High<br>Low | 761,6<br>753,6 | 876,7<br>773,4 | 4,7<br>3,3                                 |
|     | b.1. Domestic supply<br>(000 tonnes)        | High<br>Low | 321,9<br>294,6 | 433,7<br>382,6 | 34,8<br>32,9                               |
|     | b.2. Import milk<br>(000 tonnes)            | High<br>Low | 439,7<br>459,0 | 443,0<br>390,8 | ( -7,2 )<br>( -8,6 )                       |
| 5.  | Dairy population<br>(000 heads)             |             | 293            | 329            | 18,1                                       |

To achieve the about projected dairy population, importation of cattle and Artificial Insemination will be implemented.

Projection of breed production produced by local breeding cattle and imported cattle is shown in Figure 2 below.

Figure 2 : Projection of Breeding cattle Production 1987 - 1988

| No. | I T E M S              | 1987 | 1988 | TOTAL |
|-----|------------------------|------|------|-------|
| 1.  | Local breeding cattle  | 18.1 | 21.7 | 74.9  |
| 2.  | Import breeding cattle | 15.0 | 10.0 | 75.0  |
|     | T O T A L              | 33.1 | 31.7 | 149.9 |

During Pelita IV credit is also needed at about Rp. 90 billions for production packages ; Rp . 9.8 Billions for milk handling/transportation; Rp. 20 billions for investment in milk processing plant and feed mills - Totally it consist of 66 thousands dairy credit packages, 211 cooling units 123 milk transfer tanks, 5 units milk treatment, 4 units UHT processing - plant, unit milk powder/SCM plant and 10 units feed mills.

Socio economics benefits of the programme would stimulate the production of milk, meat and manure which has the value of about Rp. 212 billions; creation of labor opportunity for 260 thousands man/ years, coveniring about 98 thousnads family farmers, increasing capital inputs from cattle about - Rp. 132 billions at the end of the period ( 1988 ) of Pelita IV and also - increasing the income per family up to US \$ 2.000 per year. To achieve the above target foreign aid technical assistance is still needed.

Annex - 1.

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| NO. | I T E M   |
|-----|---|
| 1.  | Dairy Population<br>- Local cattle<br>- Import cattle             |
| 2.  | Milk Production(gross)<br>- Coop<br>- Sold to private<br>industry |
| 3.  | Milk Ratio<br>(local : import)                                    |
| 4.  | Foreign exchange<br>saving  |
| 5.  | Number of Coops.  |
| 6.  | Total dairy farmers<br>- Members of coops.                        |
| 7.  | Staff at Coops.<br>- Technicians                                  |
| 8.  | Milk value  |
| 9.  | Asset value of<br>cattle credit                                   |
| 10. | Farm gate milk price  |
| 11. | Milk prices at<br>industry.                                       |

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## Annex - 1.

## Impact on Dairy Development, Up To 1986.

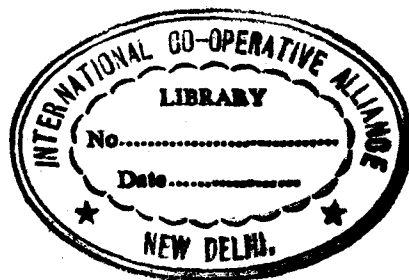
| NO. | I T E M                        | U n i t      | 1978<br>(Pra-PELITA III) | 1979<br>(Begin) | 1983<br>(Medio) | 1985    | 1986    |
|-----|--------------------------------|--------------|--------------------------|-----------------|-----------------|---------|---------|
| 1.  | Dairy Population               | 000 heads    | 93                       | 94              | 179             | 197     | 205     |
|     | - Local cattle                 | 000 heads    | 45                       | 50              | 161             | 197     |         |
|     | - Import cattle                | 000 heads    | -                        | 3.8             | 67              | 140     |         |
| 2.  | Milk Production(gross)         | 000 tonnes   | 62.3                     | 72.2            | 144.6           | 165.7   |         |
|     | - Coop                         | 000 tonnes   | 3.8                      | 10.4            | 95.2            | 148.4   | 167     |
|     | - Sold to private industry     | 000 tonnes   | 3.8                      | 10.4            | 79.2            | 139.7   | 151.2   |
| 3.  | Milk Ratio<br>(local : import) | -            | 1:25                     | 1:20            | 1:5             | 1:2     |         |
| 4.  | Foreign exchange saving        | US\$ million | 0.3                      | 1.14            | 14.3            | 18.2    | 19.7    |
| 5.  | Number of Coops.               | -            | 11                       | 19              | 183             | 173     | 173     |
| 6.  | Total dairy farmers            | 000 farmers  | 48.6                     | 52.2            | 64.0            | 66.0    | 67.9    |
|     | - Members of coops.            | 000 farmers  | 2.2                      | 6.8             | 41.7            | 59.5    | 60      |
| 7.  | Staff at Coops.                | man unit     | 525                      | 840             | 4824            | 5828    | 8921    |
|     | - Technicians                  | man unit     | -                        | -               | 367             | 843     | ?       |
| 8.  | Milk value                     | Rp. billion  | 0.7                      | 2.2             | 28.6            | 44.5    | 45.3    |
| 9.  | Asset value of cattle credit   | Rp. billion  | -                        | 1.9             | 33.5            | 70      | 82      |
| 10. | Farm gate milk price           | (Rp/kg)      | 40-80                    | 120-180         | 240-275         | 250-285 | 330-350 |
| 11. | Milk prices at industry.       | (Rp/kg)      | 70-105                   | 165-185         | 300-328         | 300-328 | 355-395 |

Annex - 2. Price Of Milk Import, Local Milk At Cooperative And  
Price Of Milk Finish Product At Consumers 1977-1986

| Y E A R | Price Average To 1 Liter Fresh Milk (Rp) |               |                           |
|---------|--|---------------|---------------------------|
|         | Imported                                 | Local (Fresh) | Long Live Milk (Consumer) |
| 1977    | 29                                       | 85            | 180                       |
| 1978    | 35                                       | 175           | 210                       |
| 1979    | 95                                       | 212           | 265                       |
| 1980    | 105                                      | 235           | 360                       |
| 1981    | 152                                      | 265           | 425                       |
| 1982    | 152                                      | 275 - 300     | 450                       |
| 1983    | 120                                      | 300 - 320     | 650 (SCM)<br>100 (UHT)    |
| 1984    | 150                                      | 300 - 328     | 750                       |
| 1985    | 150                                      | 300 - 328     | 900                       |
| 1986    | 220                                      | 355 - 395     | 1.100                     |

COOPERATIVE DAIRY DEVELOPMENT IN THE PHILIPPINES:  
ITS PROSPECTS AND PROBLEMS

The Southern Tagalog Dairy Cooperative, Inc.



A brief background paper prepared by:

Alvin C. Avanzado  
Manager, STDCI

Cooperative Dairy Development in the Philippines can be traced way back in 1967 when the Dairy Training and Research Institute (DTRI) organised small holder-farmer involved in milking and related activities and explored the possibility of a unified collection scheme. More than 500 (five hundred) farmers in Laguna, Rizal and Batangas were involved. Extension programme coming from DTRI included milk collection, processing and marketing; extension-education, technical services and cooperatives formation. The programme went on for five years and then stopped.

The Bureau of Animal Industry (BAI) undertook the same scheme in Central Luzon with its base in Santa Maria, Bulacan, hence the putting up of the Santa Maria Dairy Plant. Dispersal of Holstein-Sahiwal cattle as well as female carabao were done. Associations of more than twenty were organised from among more than one thousand small holder-farmer. The operation is still going on and is heavily subsidize by the government. Milk collection by BAI has reached a volume of more than one thousand litres a day. And this represent only 25% of the actual production. At present leaders of those associations are working on making these groups into cooperatives.

In 1979, a Batas Pambansa Bilang 21 made way to the creation of the Philippines Dairy Corporation. There were two milk production zones where PDC operates: the Southern Tagalog, consisting of the provinces of Batangas, Laguna, Cavite and Quezon; and the Northern Mindanao, consisting of the provinces of Bukidnon and Misamis Oriental. PDC was able to distribute 2500 dairy animals, majority were imported from New Zealand (Holstein-Sahiwal cross). And helped organize these farmer recipients into cooperatives (producer). Twelve primary producer cooperatives were organized in the provinces of laguna and Quezon; five in Batangas and four in Cavite.

A span of twenty years since the movement to cooperatize the dairy development in the Philippine, involving more than two thousand farmers and sad to admit that the dairy industry in our country is still underdeveloped. Although, it must be noted that dairying has, in one way or another becoming a way of life for these dairy farmers. The inception of dairying into the rural farmers is premised in augmenting their present income. And therefore, majority if not all is already engaged in other farming activities. With a divided attention, very few are able to get the full potential capacity of production from their milking animals. A low production will mean a low income, and the danger of loosing interest in milking. One or two members will want to withdraw and that is something cooperative especially dairy should be concerned. Another major concern is the certainty of the market. In the Philippines the dairy cooperatives are processing the raw milk into pasteurized freshg milk and choco milk, soft cheese (kesong puti), pastillas, and yoghurt. And the

market for these products are very limited. The Magnolia Dairy, a subsidiary firm of San Miguel Corporation, is a success story, with its main products: ice cream and fresh milk and choco milk, cheddar cheese and butter. Having almost the same line of products, again, the small (and scattered) dairy cooperatives are faced up against a giant (adversary) network.

Primarily, the dairy cooperatives in our country are all producer type except the Southern Tagalog Dairy Cooperative Inc. Those in Batangas and Cavite sell their raw milk to KKK-PRDP, a government agency involved in collection, processing, and marketing of milk and other farm produce; and also to Makiling Dairies, a Private enterprise engaged in collection and marketing of dairy products. Incidentally, STDCI and Makiling Dairies are in a contractual agreement with DTRI's processing facilities. The farmer cooperators of BAI in the province of Bulacan are selling their raw milk to the Santa Maria Dairy Plant which is also a government owned facility. It is evident, at least in my personal perception, that set up such as what we have in our country will find difficulties in controlling the many aspects involved in the systems of dairying.

In the light of these informations, I will try to present certain problems that can be identified as of now in cooperative dairy development in the Philippines:

1. Almost always, the initiatives in the pursuit of dairy projects come from the government. I see in here the problem of commitments on both parties. The farmers being too dependent and the government being too generous are bound to be inefficient.
2. Dairy cooperatives, despite some efforts from the private and government concerns are up to now divided among varied interests.
3. Despite the many extension programmes - education and training coming from cooperative and government agencies, a large percentage of the farmers involved in the dairying ventures remains ignorant (or may be stubborn) in the field especially the technical part.
4. The presence of multinational firms engaged in the same industry like the Holland Milk Products, Nestle, and even Magnolia has created an atmosphere conducive to bigness or enterprising ventures attractive to policy makers in the government.
5. The novelty of dairying in the local places and the present reality that it is cheaper to import milk and milk based products have isolated the project to a very few educated and concerned individuals.



6. Identifying the right dairy breed fitted in Philippine condition. Right now, we have the Holstein-Sahiwal cross, and reports indicate that very few are performing desirably.
7. Cooperatives at present can not afford the high cost of setting up its own processing facilities that will meet the needs of their present operations
8. The "market": Present surveys indicate that the demand for milk is very limited to the high income urban consumers. The high cost of production and processing directly corresponds to a high price of finished products and unless a subsidy for domestic production be given by the government and/or imported milk and milk based products face a tariff, the market price will prove to be insufficient for a good profit.

There are still a lot of related problems that dairy cooperatives and other private and government agencies face and confront. But altogether we are one in the belief that local dairy industry in the Philippine must be developed. The prospect of cooperative dairy development is workable and acceptable in our country. India has proven that it is viable, economical and therefore profitable. A need to unite the existing dairy (producer) cooperatives is a must to be able to economically, and socially as well, to integrate farm activities from production going vertically to marketing. The most crucial ingredient, I believe, is the total dedication and commitment of all the people involved in this endeavour. Without a concerted effort among the local dairy farmers and technologists in various levels of this industry, the staggered progress of dairy development will continue. Furthermore, I would like to reiterate the need for everyone concerned to have another look in the direction presently being followed in our dairy development whether cooperatively or particularly.

## II

The Southern Tagalog Dairy Cooperatives was first conceived as a secondary organization, a federation of twelve (12) primary dairy cooperatives. It will serve to be the "Marketing Arm" for these producer-cooperatives. Each primary cooperative (raw milk producer) will provide its own collection scheme and deliver the total produce to STDC, which in turn coordinating with the Dairy Training and Research Institute (DTRI), base at DTRI's processing plant, receive, process, and market the milk.

That set-up was done to pool the resources of the small dairy farmers who were then face-up with a common problem of what to do with their produce (raw milk). These dairy farmers of the provinces of Laguna and Quezon were all recipients of local, as well as imported dairy cows (Holstein X Sahiwal) dispersed by the Philippine Dairy Corporation (PDC), a government firm created in 1979 by a Batas Pambansa Blg. 21. When PDC started its dispersal programme (Paiwi System) in 1983, its operation was fully integrated from monitoring of animal's condition, collection of milk from farmer cooperator, quality standardization, processing and finally marketing the milk and milk products. The farmer cooperators (as they were called by PDC people) were doing well and satisfied, considering the heavy support being extended to them, until a drastic change happened after the "February Revolution" that toppled down the Marcos Administration. People on top of PDC were replaced that virtually put its usual operations to a standstill. That was the time, the "farmer cooperators", who were, loosely organized into associations, realized the need to control the fate of this new found livelihood. And that was the beginning of the Southern Tagalo Dairy cooperative Inc. (STDCI).

With the very needed support of UP at Los Banos through the leadership and expertise of the Agricultural Credits & Cooperatives Institute and the DTRI, business operation commenced in 1986. For almost ten months the cooperative (STDC) suffered losses from spoilage and leakage but still was able to continue. Another problem in its early months was the pending registration with the Bureau of Cooperatives Development (BCOD). Because it was a secondary cooperative, the primary cooperatives must be first registered. And all the twelve primaries were being burdened with many requirements, that it will take some time to satisfy. And so with that, a special General Assembly of STDC was held and a decision was reached to make STDC into a primary coop. In a week time, registration was finished with the BCOD. A board of nine (9) members is at the helm of the business operation that include the collection, grading, and distribution of processed milk and milk products. We have three collection centres. A motorised tricycle for each center that goes around

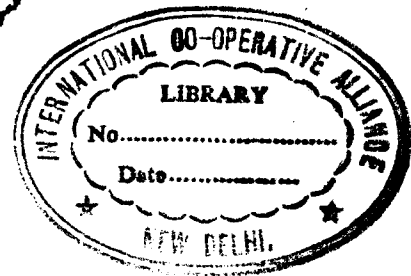
the barangays (villages) to bring the milk to the processing plant. Then after processing, STDC through its marketing staff will bring the processed milk to authorized dealers who in turn deliver or retail to household consumer. Authorized dealers may be an individual proprietor, a small store, a grocery or a supermarket.

STDC has a total of 228 members with at least one cow per member. At present 500 liters of raw milk are processed into 40% pasteurise whole cow's milk, 40% pasteurize choco milk, 10% soft cheese (kesong puti), 10% others like yoghurt, pastillas, lactoflan. Of the original 600 dairy cow (holstein X Sahiwal) disbursed among farmer-member of STDC, 200 were left (400 were either returned to PPC or were dead). Of the 200 left, 100 are productive, the other half are dry.

STDC as a marketing cooperative is in its proper direction however, the board and the general membership should take a look back in the production aspect that involves the proper care of the cow, the nutrition and health of the animal, the breeding (AI) programme, and the needed education and training of the farmer members in general.

And finally, it is worth mentioning that among the dairy cooperatives in the Philippine, STDC is the only cooperative that took the initiative to have a vertical structure of production, collection, processing, and distribution of processed milk and milk products. And because of this, I believe that a cooperative dairy development in the Philippines is beginning.

iv:rtcaca:6



**COOPERATIVE DAIRY  
DEVELOPMENT IN  
THAILAND ;**

**Prospects and Problems**

**December 6 - 19, '87**

# **PART 1**

INTRODUCTION OF AGENCIES  
INVOLVED WITH DAIRY  
DEVELOPMENT

## AGRICULTURAL COOPERATIVES IN THAILAND

### 1) Introduction

Agriculture is the mainstay of the Thai economy, involving about 65% of the population.

Emphasis has been placed on the development of agriculture, aiming to increase productivity and improve the social and economic status of farmers. Part of this emphasis has come in the formation of agricultural cooperatives.

### 2) The Cooperative Movement in Thailand

The first cooperative in Thailand was initiated by the government in 1916. This village credit cooperative followed the Raiffaisen model. The purpose of this cooperative was to help relieve farmers' debts and prevent their mortgaged lands from being foreclosed by money lenders. Satisfied with the first cooperative developed, others were established in other provinces.

After the first Cooperative Societies Act was passed in 1928, other cooperatives were established and a cooperative movement of producers and consumers was formed in the Kingdom.

### 3) Types of Cooperatives

At present there are six types of registered cooperative societies:

- i) Agricultural cooperatives
- ii) Fisheries cooperatives
- iii) Land settlement cooperatives
- iv) Consumer cooperatives
- v) Service cooperatives
- vi) Thrift and credit cooperatives

Dairy cooperatives are a type of agricultural cooperative.

### 4) Structure of Cooperatives

The cooperatives in Thailand are vertically organized into three levels:

- i) Primary societies at the local level
- ii) Secondary societies at the provincial level
- iii) Apex societies at the national level

Primary agricultural societies consist of individual farmers, divided into village groups for training purposes, business activities and the selection of proposals for forwarding to the board of directors.

At present there are 2186 cooperative societies in Thailand. Three or more primary societies can form a secondary federation. These secondary federations undertake joint activities on behalf of their primary affiliates; including processing of agricultural produce.

At present, there are 70 agricultural cooperative federations functioning at the provincial level. At the national level, the agricultural cooperatives Federation of Thailand (ACFT) is the apex society.

i.e. The swine raising cooperative federation is the apex society of the pig raising cooperatives.

## 5) Government Organisations Responsible for Cooperatives

The government agencies within the Ministry of Agriculture and Cooperatives perform a dominant role in the development of cooperatives.

### 5.1) The office of the Registrar of Cooperatives

According to the cooperative societies act BE2511, the registrar of cooperatives is responsible for registering and controlling cooperatives, appointing cooperative auditors and performing other works authorized by the Act. At present, the permanent secretary to the ministry of Agriculture and Cooperatives is the acting cooperative registrar.

### 5.2) Cooperative Promotion Department

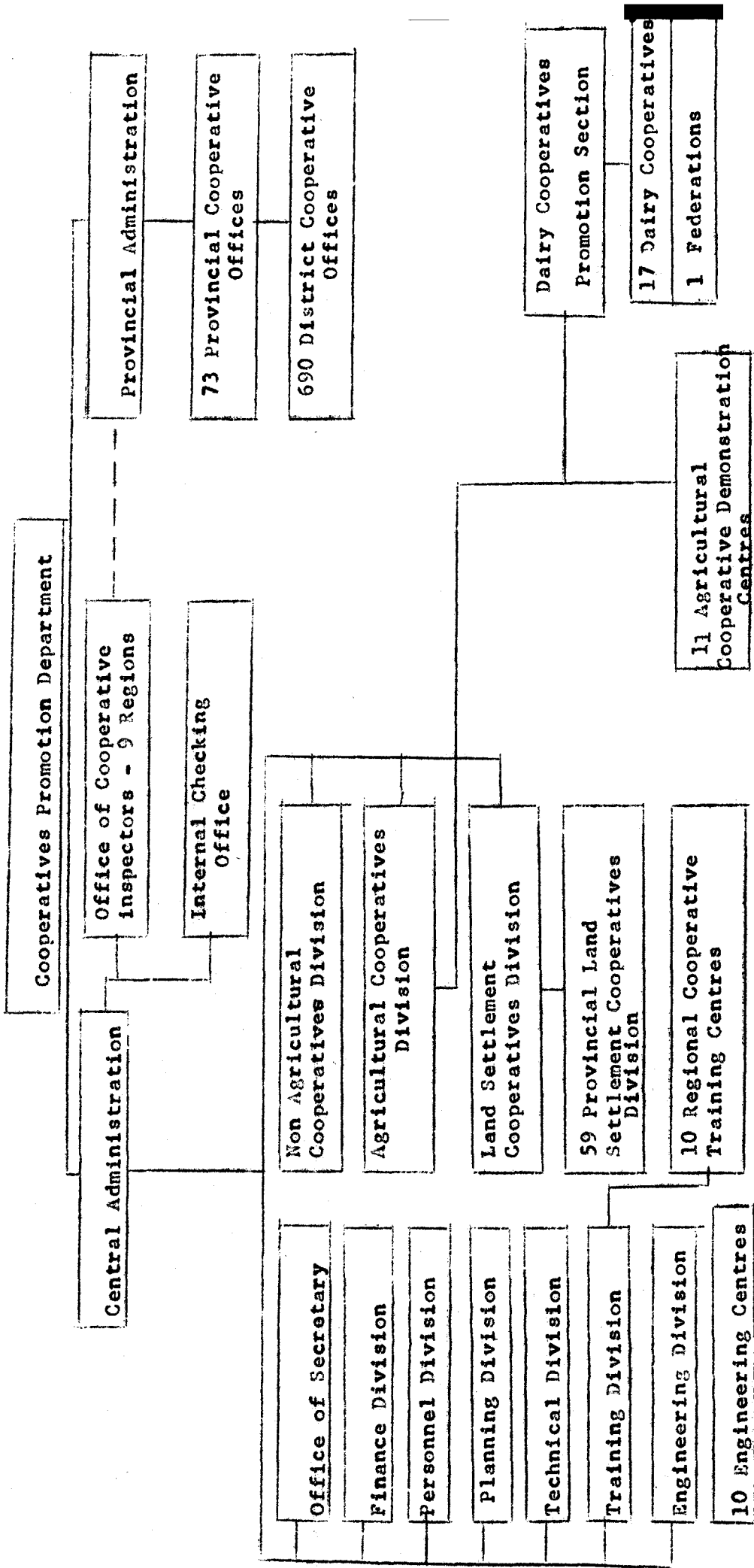
The CPD is in charge of supervising and promoting cooperatives, including the provision of loans to cooperatives. The CPD is responsible for publicising the principles and methods of cooperatives among the people. The CPD has to encourage the establishment of cooperatives with the objective of improving the standard of living of their members. The CPD monitors both the management and accounts of the cooperatives to ensure they are run according to government regulations. Recently, the CPD has tried to promote extension work in dairy cooperatives, both by placing some of its own staff and by placing foreign volunteers at the cooperative level.

The administration of the CPD is divided into two parts: Central and Provincial. There are ten divisions including nine regional offices under the central administration. The provincial administration is divided into provincial and district offices.

The organisational structure of CPD is given in Chart 1.

CHART 1

Organizational Structure of CPD





### Function of the Dairy Cooperatives Promotion Section

- 1) **Training component.** The farmers are advised on the principles and ideals of the cooperative to help them understand how it functions before they decide to become members.
- 2) **Survey the economics and location of a proposed cooperative site.** The number and location of dairy farmers in the area and the results of them joining together to form a cooperative are considered to decide if the cooperative will be viable.
- 3) **Support established dairy cooperatives by sending a technician from the Dairy Promotion Section who is responsible for the following:**
  - 3.1) **Collection of milk from the farmers and maintaining it in top quality.**
  - 3.2) **Checking the quality of the milk at the time of pick-up.**
  - 3.3) **Processing the milk into a dairy product.**
  - 3.4) **Promotion of the cooperative's products on the market.**
  - 3.5) **Supervising operation of the feed mill to ensure production of a high quality dairy ration at least cost that will result in satisfactory lactation yields.**
- 4) **Helping the cooperative in locating cheaper consumer goods that are required on the farm, for sale to cooperative members.**
- 5) **Act as a consultant on frozen semen purchases and seeking foreign cooperation in artificial insemination matters.**
- 6) **Cooperate with government agencies and private companies to improve production and efficiency of cooperatives.**

A dairy cooperative is a special form of agricultural cooperative. All the needs of the cooperative are monitored and handled on the provincial level with the exception of those specified above.

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### The Department of Livestock Development (DLD)

DLD provides many services to the dairy farmer, their main impetus being in artificial insemination and vaccination programs. DLD produces semen, distributes it to AI centers throughout the country and provides inseminators for the local farmers. Any AI station may obtain semen to upgrade local cows to dairy animals. Independent of the AI centers are livestock breeding stations. At some of these stations, dairy animals may be obtained. In each province at the agricultural office there is a provincial livestock officer. These veterinarians, as far as dairying is concerned, are responsible for disease control (TB and IBR), reporting positive animals to owners and asking their cooperation in disposing of the animals. They also administer district offices. At the district level, livestock officers are responsible for vaccinations for contagious diseases such as Foot and Mouth, brucellosis and haemorrhagic septicemia and providing treatments. Similar to the livestock breeding stations are animal feed research and seed production stations where seeds and stalks for growing various legumes and pasture species are available. The location of both the livestock breeding and animal feed research stations are indicated on the preceding map. For a fee, non-government organizations may have feeds analyzed at the feed division located at DLD. DLD has cooperated with FAO to strengthen the national dairy situation. DLD has provided the site for FAO/RDDTTAP at the livestock breeding station, as well as being intricately involved in training courses in dairy production. More recently, inline with FAO's policy of transferring responsibility from FAO to the developing country, DLD has set up the National Dairy Training and Applied Research Institute (NDTARI).

# **PART 2**

DAIRY DEVELOPMENT AND  
COOPERATIVES IN  
THAILAND

## DAIRY FARMING: ITS DEVELOPMENT IN THAILAND

There is no record of the development of the first dairy farms in Thailand; however, there are reasons to suggest that the raising of dairy cattle for milk was started some 70 years ago.

The first dairy farm was set up and managed by a government official. Unfortunately, milk drinking was not very popular at that time, and the operation eventually had to close down.

Not until the 1940's, when there was a shortage of milk did the government give serious consideration to the establishment of a body responsible for milk production. Milk was produced on a commercial basis by the local Indian community; however, this operation disbanded at the end of World War II.

Some years later, the department of Livestock Development (DLD) under the Ministry of Agriculture imported some Red Sindhi cattle from India, to be cross bred to the Bangala cattle raised locally.

In 1952, Kasetsart University imported a herd of pure-bred Jersey cattle from Australia and subsequently, other breeds were imported, including Holstein Friesian cattle and Brown Swiss cattle from the United States.

The development of the dairy industry in Thailand has followed a similar course to that of other countries. A short synopsis of its development is given here.

- 1956 - The Food and Agriculture Organization of the United Nations (FAO) conducted a survey on animal husbandry practices in Thailand. Their recommendation was to improve the locally raised cattle by cross breeding with foreign breeds to increase production.

Consequently, the Department of Livestock Development (DLD) opened the first artificial insemination (AI) center in Chiang Mai. The first native cow was bred with imported Holstein Friesian semen that same year.

- 1957 - AI stations were established in Bangkok and Ratchaburi  
1959 province respectively.

- 1960 - In the early 1960's, programs were initiated by the government and the United Nations, providing powdered milk for mothers and infants in government health clinics. At the same time, powdered milk was being provided for undernourished children in schools. This created a new generation familiar with milk consumption, providing a market for the fledgling dairy industry.

- 1961 - His Majesty the King Bhumibol Adulyadej, foreseeing the potential of dairying in Thailand, discussed its possibilities with the government of Denmark. As a result of these discussions, the Thai-Danish Dairy farm was established in Muaklek, Saraburi province, with financial and administrative help from the Danes.
- By this time, the DLD had established three other AI centres in the provinces of Nakorn Pathom, Petburi and Chiang Rai.
- 1962 - AI stations were opened in Saraburi and Prachuab-Kirikhan.
- 1965 - With the financial assistance from the German government, the Thai-German Dairy Farm was started in Chiang Mai, at the site of the AI center. The popularity of drinking milk was boosted as three private companies, Foremost, Mali and Nestle, started producing and promoting reconstituted plain and flavored drinking milk as well as sweetened condensed milk.

The dairy industry, then, had a firm beginning with a prospective market and the necessary breeding programs to upgrade the local cattle. It was in fact a very self promoting industry, as the steady income from dairying was far more lucrative than the insecure income of cash cropping.

It was soon obvious that farmers required more in the form of extension to improve their management of dairy cattle. Marketing problems for such a perishable product as milk, were soon causing financial losses to farmers. Due to a lack of storage and processing facilities, the farmers would rise at 3:00 a.m. to do the once a day milking. They would boil the milk, add sugar for flavoring and put the product into glass Mekong bottles for sale at the market at 6:00 a.m. Any unsold milk was left to spoil.

Dairying required a substantial initial investment and low interest loans to promote this enterprise to farmers. For these and other reasons, the Dairy Promotion Organization (DPO) was established, and farmers began to organize themselves into cooperatives.

- 1970 - The first dairy cooperative in Thailand was opened in Ayuthaya.
- 1971 - The Thai-Danish Dairy farm became the state enterprise known as DPO. Fifty one percent is owned by the government, and 49% is owned by the private sector. Two more dairy cooperatives were started, one in Nong Pho, Ratchaburi province, and the other in Nakorn Pathom province.

- 1972 - FAO started its Regional Dairy Development and Training Team for Asia and the Pacific (FAO/RDDTTAP) headquartered in the Phillipines. Their initial emphasis was on basic training in subjects related to milk production, milk collection and milk processing in order to supply the country with the trained personel necessary to service the dairy industry.
- 1974 - The DLD with financial assistance from the Dutch government opened the Thai-Netherlands Artificial Insemination Station in Pathum Thani to produce frozen semen and to provide training and conduct research on breeding.
- The fifth dairy cooperative was opened in Chiang Mai.
- 1980 - Dairying being a lucrative business, the supply of raw milk was ever increasing. It became necessary to ship milk farther and store it longer than the process of pasteur<sup>4</sup> ation would allow. Ultra Heat Treated (UHT) milk was introduced to solve these problems. DPO was the first to produce UHT milk, followed closely by; Nong Pho, '80; Mali, '81; Nestle, '82; and Foremost, '84. FAO/RDDTTAP moved its headquarters to the Livestock Breeding Station in Chiang Mai.
- 1982 - The Thai liquid milk market suffered a surplus in this year, eventhough the Thai dairy farmers supplied only five per cent of the actual milk market. DPO and other cooperatives using fresh, whole milk in their product, were competing with private processors using recombined milk, but both products were receiving the same retail price. A kilogram of Thai raw milk costs nearly 40 percent more than its imported equivalent (6.50 Baht/Kg : 4.00 Baht/Kg). It is clear to see that there was no competition, and unfortunately the Thai dairy farmers lost.
- 1983 --There were strong protests over the losses encountered the previous year, and the Thai government adopted the following legislation.

Acting on the advice from the Ministry of Agriculture and Cooperatives (NOAC), the Ministry of Industry introduced the Skim Milk Import Bill 1983 which required producers of "ready-to-drink milk, either pasteurized or UHT, to use at least 1:1 raw fresh milk to recombined milk. Noreover, the firms must purchase 20 per cent more domestic fresh milk annually. ATthe same time, the Ministry of Commerce introduced the Importation and Exportation of Products Act 1983.

This introduced a permit system under which import approvals are contingent on the guarantee to purchase a kilogram of fresh milk for each kilogram of imported powder.

As well as these pieces of legislation, the idea of collectively processing and advertising Thai milk under a national brand, developing a milk marketing board and building a powdered milk plant were discussed as additional means of counteracting any future surpluses.

- 1984 - Despite the import regulations, supply once again exceeded demand this year. The regulations laid down by the government have never been strictly enforced.
- 1985 - DPO, cooperatives, private processors and the government combined to form "The Milk Consumption Promoting Committee". This committee coordinated a collective advertising program overall types of media. Their slogan; "Have you had a glass of milk today?".
- 1986 - The advertising program paid off, with demand for fresh milk increasing by 20 percent; 15 percent more than the previous year.



### Dairy Cooperative Development in Thailand

In 1970 - 71 dairy farmers in Amphur Utai, Ayudhaya Province and in Amphur Huang, Nakorn Pathom Province were producing more milk than was demanded on the local market. The farmers turned to the Government to ask for help in solving their problems. At that time most of the milk was consumed in Bangkok and not in the country-side.

With cooperation from the Danish Government, two milk collection centres were built in these provinces. While the equipment was supplied fully by the Danish Government, the Thai Government was completely responsible for providing buildings and other facilities and for collecting and cooling the raw milk. The Danish Government also provided two dairy technicians to help operate the milk plants.

While the collection centres were being built, the dairy farmers formed into cooperatives. The cooperatives collected, cooled and stored the milk or after cooling, sold it in part to a company based in Bangkok, processing the remainder for the local market.

The cooperatives also provided other services to the members. With loans from the BAAC, consumer goods were purchased at cheap prices and resold to the members. Members receive added bonuses at the end of each fiscal year, the amount depending on the volume of business they did with the cooperative in the previous year.

In 1972 the dairy farmers in Muak Lek joined together to form the Muak Lek Dairy Cooperative Ltd. All of the dairy farmers are located in the Public Welfare Department's land settlement area and have use of the land for the duration of their lives.

The Dairy Farm Promotion Organization (DFO), formerly known as the Thai Danish Farm Organization, has assisted farmers since 1962 by providing them with dairy training. After the Muak Lek Dairy Cooperative Ltd. received a license from the Government, the cooperative committee governed it diligently. The objectives of the cooperative are:

- 1) to collect the milk from the farms and transport it to DFO milk collecting centres.
- 2) determine the commodity needs of cooperative members and supply them at the base market price.
- 3) supplying farm equipment and tools.
- 4) provide an A.I. service.

The cooperative plans to learn about feed mill operation and concentrate components before erecting its own feed mill in the future.

The Thai-German project was born in 1974 in Chiang Mai Province as a means of promoting milk and meat products. It was a cooperative effort between the Thai and German Governments. The Department of Livestock Development acted as coordinator. The project aimed to increase farm incomes by promoting cattle raising for either dairy or beef purposes. A milk processing plant, slaughter house and meat processing facilities were constructed. It is the duty of the cooperative to transport the milk and cattle from the farm level to the processing plant and slaughter house respectively. While DLD processed both the milk and meat into saleable products, the cooperative was responsible for distribution. Problems arose and DPO assumed control of the milk plant. The cooperative has since built a smaller plant and the business runs smoothly.

In 1977, with personal funds and the help of a grant, the cooperative was able to build a modern pasteurizing plant capable of handling 30 tonnes of milk daily. Due to the need for refrigeration, short shelf life and high transportation costs associated with pasteurized milk, it became evident that, the production of UHT (ultra heat treated) milk could expand the market base for Nong Pho milk. In 1980, the Nong Pho Dairy Cooperative began producing UHT milk using the UHT machine produced by Tetra Brik.

In 1981 farmers in the vicinity of Bangkok were experiencing decreasing incomes from the agricultural sectors. They negotiated with a commercial bank in Bangkok for the loan of roughly two million baht to fifty members. This was to provide three dairy cows per family and some implements for farm use. The bank agreed in principle but suggested the formation of a farmer's cooperative. Although the Cooperatives Promotion Department followed their suggestion, the loan failed to materialize. Cooperation from another bank then had to be sought.

The same year witnessed farmers in Chaibadan, Lopburi Province switch from cotton production to dairy holdings. Cotton producers had experienced many years of financial loss due to draught and pest problems. The dairy cooperative was established and received a loan from CPD for purchase of dairy cattle, mostly from the neighboring Patana Nikom district. It mixes a dairy concentrate and sells goods necessary for farm and household use. The raw milk is delivered to a DPO milk chilling centre by the farmers.

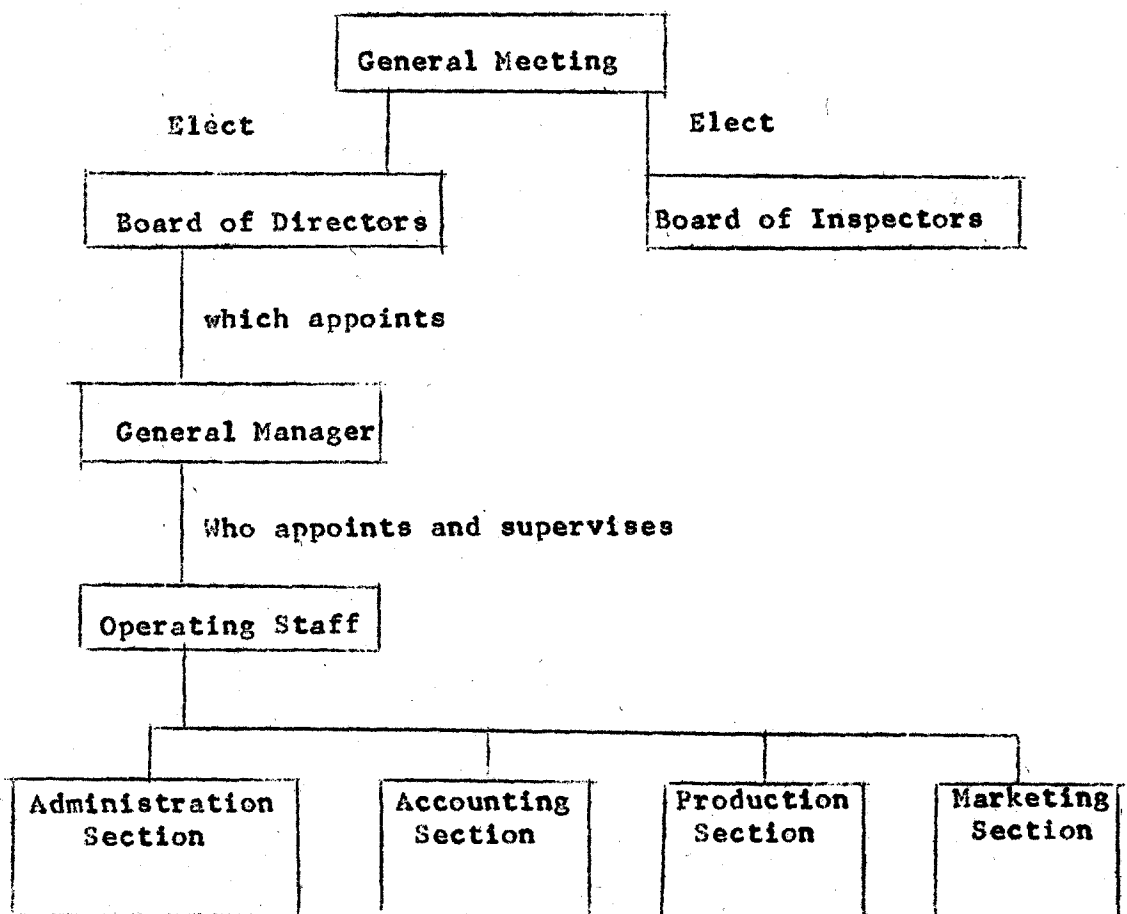
Between 1981 and 1983 Prachuab Kirikhan Dairy Cooperative Ltd. and Petchburi Dairy Cooperative Ltd. were born. Dairying was encouraged as an alternative to pineapple production due to over-production and falling prices of the latter. The Office of Agricultural Economics (OAE) and the Bank of Agriculture and Agricultural Cooperatives aided the farmers by importing dairy

cattle from New Zealand. Each farmer received five cows and DPO provided a guaranteed market for the milk. To reduce the cost of production, the cooperatives mix their own dairy concentrate for sale to the members. Extension services are provided by DLD while CPD is responsible for organizing and training efforts.

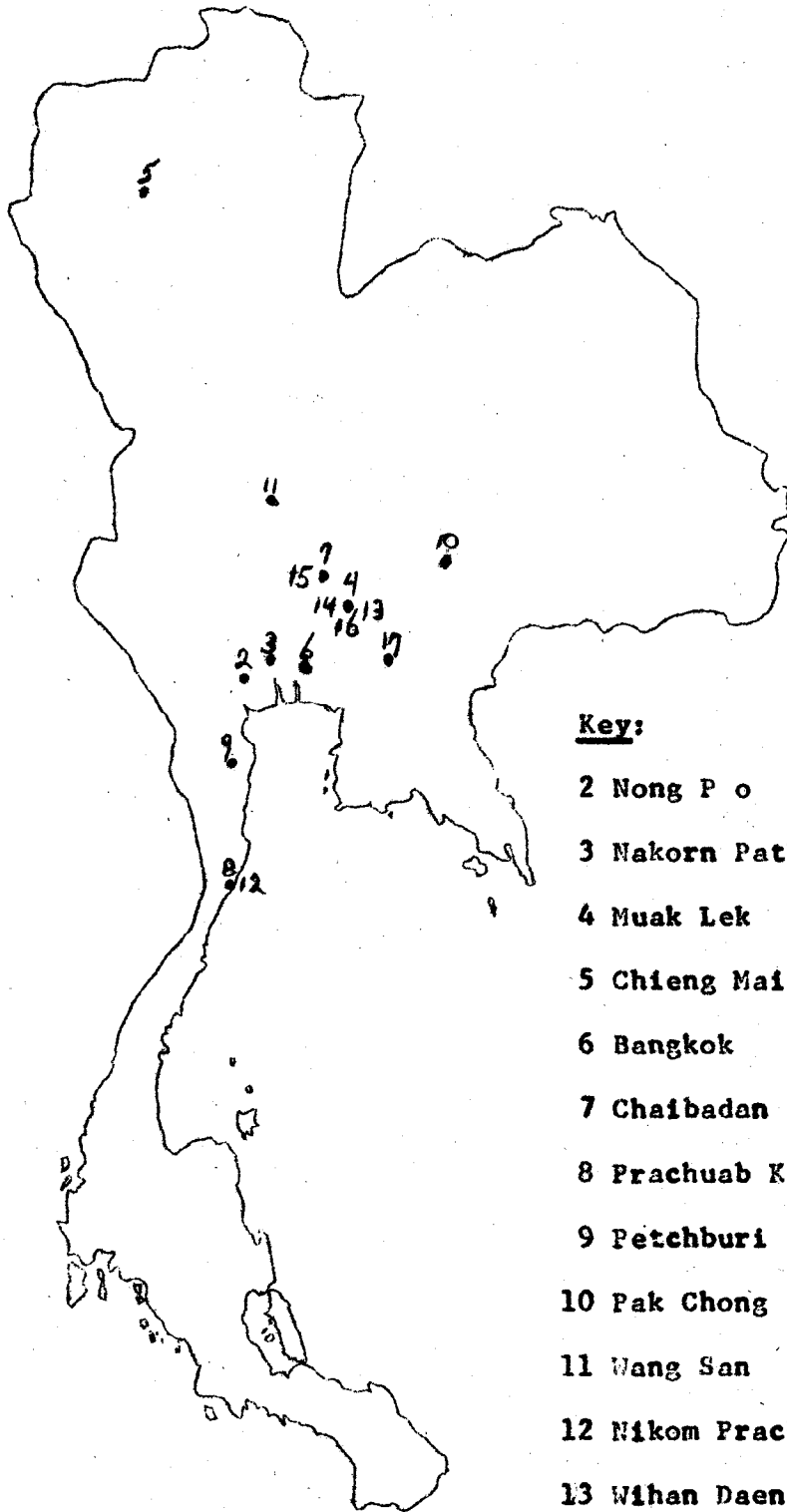
In 1984 four additional dairy cooperatives were established: Wihan Daeng, Praputabat, Pak Chong and Nikom Prachuab. All milk was sold to DPO and originally dairy concentrate was purchased there as well. The distance from the milk chilling centre to the DPO processing plant is about 100 kms. so fuel expenses are high. Although they wanted to establish their own feed mill and utilize low costs grains and agricultural by-products available locally, this was not possible due to a continuing debt to BAAC. Consequently, they had to settle for selling the feed components to their members and allowing them to mix it themselves.

CHART 2

Organization and Management Relationship  
of Dairy Cooperatives in Thailand



DAIRY COOPERATIVES IN THAILAND



Key:

|                     |                   |
|---------------------|-------------------|
| 2 Nong P o          | Ratchaburi        |
| 3 Nakorn Pathom     | Nakorn Pathom     |
| 4 Muak Lek          | Sara Buri         |
| 5 Chieng Mai        | Chieng Mai        |
| 6 Bangkok           | Bangkok           |
| 7 Chaibadan         | Lobhuri           |
| 8 Prachuab Kirikhan | Prachuab Kirikhan |
| 9 Petchburi         | Petchburi         |
| 10 Pak Chong        | Nakorn Ratchasima |
| 11 Wang San         | Nakorn Sawan      |
| 12 Nikom Prachuab   | Prachuab Kirikhan |
| 13 Wihan Daeng      | Sara Buri         |
| 14 Praputabat       | Sara Buri         |
| 15 Patana Nikom     | Lobhuri           |
| 16 Lum Phaya Klang  | Sara Buri         |
| 17 Wang Nam Yen     | Prachinburi       |

## DAIRT COOPERATIVES IN THAILAND

| No. | NAME                | PROVINCE          | DATE LICENCED | MEMBERSHIP |       |       | SHARE CAPITAL in '000' Baht |       |        | TA |
|-----|---------------------|-------------------|---------------|------------|-------|-------|-----------------------------|-------|--------|----|
|     |                     |                   |               | 1984       | 1985  | 1986  | 1984                        | 1985  | 1986   |    |
| 1   | Ayudhaya            | Ayudhaya          | 15 Sept. 1970 | -          | -     | -     | -                           | -     | -      |    |
| 2   | Nong Pho            | Ratchaburi        | 15 April 1971 | 1,708      | 1,910 | 2,406 | 3,301                       | 9,813 | 11,973 |    |
| 3   | Nakorn Pathom       | Nakorn Pathom     | 1 July 1971   | 108        | 125   | 144   | 116.8                       | 139   | 151    |    |
| 4   | Muak Lek            | Sara Buri         | 28 Aug. 1972  | 188        | 230   | 292   | 213.3                       | 275.3 | 445    |    |
| 5   | Chieng Mai          | Chieng Mai        | 1 July 1974   | 261        | 320   | 361   | 96.6                        | 102.5 | 162    |    |
| 6   | Bangkok             | Bangkok           | 30 March 1981 | 172        | 169   | 172   | 28.4                        | 29.4  | 29     |    |
| 7   | Chaibadan           | Lobบุรี           | 12 May 1981   | 96         | 104   | 161   | 265                         | 281   | 370    |    |
| 8   | Prachuab Kirikhan   | Prachuab Kirikhan | 9 Dec. 1981   | 184        | 184   | 180   | 306.2                       | 330.5 | 333    |    |
| 9   | Petchburi           | Petchburi         | 15 Sept. 1983 | 123        | 133   | 163   | 54.1                        | 55.3  | 66     |    |
| 10  | Pak Chong           | Nakorn Ratchasima | 19 June 1984  | 147        | 206   | 222   | 71.6                        | 89.9  | 125    |    |
| 11  | Wang San            | Nakorn Sawan      | 6 Aug. 1984   | 80         | 79    | 108   | 9.3                         | 12.9  | 27     |    |
| 12  | Nikom Prachuab      | Prachuab Kirikhan | 3 Dec. 1984   | -          | 231   | 270   | -                           | 82.9  | 13.6   |    |
| 13  | Wihan Daeng         | Sara Buri         | 27 Dec. 1984  | -          | 49    | 46    | -                           | 72.3  | 15     |    |
| 14  | Praputabat          | Sara Buri         | 27 Dec. 1984  | -          | 64    | 62    | -                           | 61.5  | 78     |    |
| 15  | Patana Nikom        | Lobบุรี           | 16 April 1985 | -          | 220   | 224   | -                           | 110   | 117    |    |
| 16  | Lum Phaya Klang     | Saraburi          | 20 July 1987  | -          | -     | -     | -                           | -     | -      |    |
| 17  | Wang Nam Yen        | Prachinburi       | 22 July 1987  | -          | -     | -     | -                           | -     | -      |    |
| 18  | Kao Klung Livestock | Ratchaburi        | 20 July 1987  | -          | -     | -     | -                           | -     | -      |    |



# **PART 3**

PROBLEMS AND PROSPECTS OF  
THE DAIRY INDUSTRY IN  
THAILAND



### Dairy Industry: Size and Location

As of 1984, there were 4,000 dairy farmers with 50,000 dairy cows, producing 119 tons of milk daily in Thailand. This provided employment for approximately 15,000 people in the dairy industry.

Dairy production centers around the two main markets in the country are listed below. The two main centres are Bangkok and Chiang Mai. Recently, dairying has also sprung up in the south and the North-East.

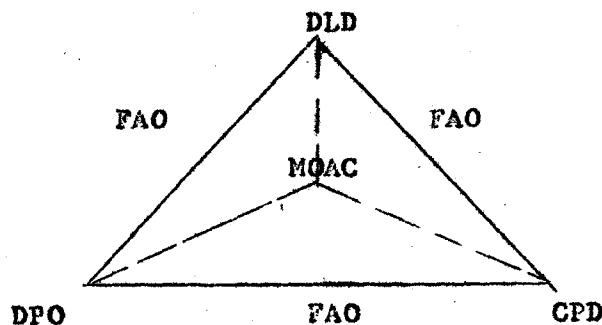
- 1) Northern Region : Chiang Mai, Chiang Rai, Phitsanulok.
- 2) North Eastern Region : Khon Kaen, Sakorn Nakorn,
- 3) Central Region : Ayuthaya, Bangkok, Chonburi, Lopburi, Nakorn Pathom, Petchburi, Prachuab Kirikhan, Ratchaburi, and Saraburi.
- 4) Southern Region : Chumporn and Phattalung.

### Infra Structure of Services in the Thai Dairy Industry

From the brief history it can be seen that there are four main groups and government departments involved in the service of the dairy industry.

The 1986 list of departments and groups involved in the dairy industry show a large expansion of the industry. DPO, DLD, OLD, CPD and FAO are all involved in some form with the industry. The DLD and CPD are government departments of the Ministry of Agriculture and Cooperatives (MOAC). Eventhough DPO is a state enterprise, it is under the supervision of the government, as the MOAC is its president. FAO works primarily with DLD, but is also trying to coordinate all sectors.

Pictorially this may be represented as follows.



## BACKGROUND

Following the sixth National Economic and Social Development plan, (1987-91) the Thai government has increased its support for the raising of dairy cattle.

In 1986, in Thailand, there was an estimated 30,000 head of milk producing cows, from a total of 56,000 head of dairy cattle.

Raw milk production was at a level of 13 per cent of total milk consumption (175 tons per day produced with a consumption of 1,400 tons per day).

The dairy sector therefore is very important to the economic development of Thailand. To make full use of this important industry, the office of Agricultural Economics, under the Ministry of Agriculture and Cooperatives planned the Dairy Development Policy (DDP).

The policy is intended to link government agencies and interested private sector agencies. This is an effort to coordinate development and progress in the dairy industry.

## PROBLEMS

- 1) Lack of dairy cattle breeds.
- 2) Reconstituted milk powder is cheaper than the raw milk farmers produce in Thailand.
- 3) Lack of research and good farm management.
- 4) Farmers live far apart, so it is difficult to collect the milk and provide services to the farmers.
- 5) There are not enough milk collection centres, so milk is shipped over long distances, adversely affecting milk quality.
- 6) The farmers do not use the cooperative system to solve their basic problems. Farmers do not understand the cooperative principles through which they can be helped. Farmers may lack the money to expand their operation, or cooperatives lack money to run their business effectively.
- 7) There is a lack of efficiency and experienced personnel.
- 8) There are many businesses involved in the dairy industry, but they are not coordinated, thus difficult to control.

### The Dairy Development Policy

- 1) To promote and expand dairy production in suitable areas, in order to reduce the imports of whole milk, powder milk, and other dairy products from foreign countries.
- 2) To increase efficiency and quality of raising dairy cattle, transportation, processing and marketing of dairy products.
- 3) Support farmer's associations to strengthen them. Support dairy cooperatives, increasing efficiency and co-operation between cooperatives.
- 4) Promote the use of more raw milk in processing.
- 5) Promote private sector involvement in the development of the dairy industry to reduce the government's involvement.
- 6) To support the establishment of a dairy development board so that all involved in the dairy industry can plan dairy policy and production plans.

### Target

The Dairy Promotion Project was set up by the government to develop and promote the dairy industry.

Presently, the DPP is involved both in expanding the number of dairy cattle and increasing raw milk production.

### 1987-1996 Period

Based on the size of the present dairy herd, the DPP plans to increase the number of Artificial Insemination breedings by 1000 per year, for the next five years. During this same period, the importation of 2000 pregnant head of cattle yearly will supplement the AI breedings.

Estimates for 1991 are 59,800 head of dairy cattle in Thailand and milk production of 147,000 tons per year. By 1996 the estimates are 197,000 and 328000 respectively.

This means an average yearly increase of 14 and 18 per cent respectively, for the number of dairy cattle and the raw milk production in the country.

### Pattern of Development

- 1) The registered areas should be suitable for raising dairy cattle. It will be emphasized that the dairy policy should be followed. The area will be assigned to the department of Agriculture and Economics, who, with the cooperation of DLD, DPO and CPD and the private sector will develop the new areas.

- 2) To increase the number of dairy cows in Thailand, the government will import 5-7 month pregnant cows, and sell them to the farmers. DLD and DPO will provide training and information for farmers raising dairy cattle. The Bank of Agriculture and Agricultural Cooperatives (BAAC) will arrange low interest, long term credit for farmers.  
An additional 15 cooling centres will be built and 15 milk transport trucks will be purchased to send the milk from these cooling centers to the dairy plants.
- 3) Selection of genetically superior cows for cross-breeding and upgrading of dairy cattle will be focussed on heavily.
- 4) The introduction of a school milk project and the promotion of milk drinking in schools. Both of these projects are important for the health of the people.
- 5) Providing subsidies for farmers to help cover high interest rates along with long term loans.
- 6) Advise farmers to work in a cooperative system, and provide technicians and consultants to the cooperatives through the CPD.

CHART 3

NUMBER OF DAIRY CATTLE

AND MILK PRODUCTION

| YEAR                  | Total No.<br>of female<br>dairy cat. | Heifers<br>and<br>calves | Producing<br>Cows | Average milk yield |            |
|-----------------------|--------------------------------------|--------------------------|-------------------|--------------------|------------|
|                       |                                      |                          |                   | Tonnes/year        | Tonnes/day |
| 1982                  | 30,046                               | 16,280                   | 13,766            | 27,027             | 74         |
| 1983                  | 39,426                               | 20,233                   | 19,193            | 36,030             | 99         |
| 1984                  | 48,489                               | 24,639                   | 23,850            | 46,197             | 127        |
| 1985                  | 50,988                               | 26,410                   | 24,578            | 54,560             | 149        |
| 1986 *                | 56,170                               | 26,271                   | 29,899            | 64,000             | 175        |
| Average<br>Increase % | 16                                   | 13                       | 20                | 24                 | 24         |

Source: Office of Agriculture and Economics

Note: 1986 census



**CHART 5**  
**QUANTITY OF MILK POWDER ENTERING THE COUNTRY**

| YEAR                       | INFANT FORMULA |                | MILK POWDER WITH NO LESS THAN 26 % BUTTER FAT CONTENT |       | MILK POWDER WITH 1.5-26 % BUTTER FAT |       | MILK POWDER WITH LESS THAN 1.5% BF |       | BUTTER OIL |       | OTHER  |       | TOTAL  |         |
|----------------------------|----------------|----------------|---|-------|--------------------------------------|-------|------------------------------------|-------|------------|-------|--------|-------|--------|---------|
|                            | Quan. '000     | Value '000,000 | Quant.  | Value | Quant.                               | Value | Quant.                             | Value | Quant.     | Value | Quant. | Value | Quant. | Value   |
| 1982                       | 12.10          | 932.3          | 1.28  | 62.9  | 0.14                                 | 6.5   | 17.07                              | 432.2 | 2.84       | 169.9 | 0.86   | 45.9  | 34.29  | 1,649.7 |
| 1983                       | 11.95          | 912.8          | 3.42  | 183.7 | 1.53                                 | 102.9 | 28.12                              | 618.1 | 4.08       | 224.0 | 1.61   | 48.0  | 50.71  | 2,089.5 |
| 1984                       | 12.38          | 943.1          | 4.90  | 271.1 | 1.25                                 | 36.4  | 29.08                              | 556.1 | 3.90       | 186.0 | 3.09   | 74.2  | 54.60  | 2,066.9 |
| 1985                       | 11.34          | 981.5          | 5.30  | 331.9 | 2.06                                 | 99.9  | 25.84                              | 526.8 | 4.55       | 196.0 | 2.11   | 57.1  | 51.20  | 2,193.2 |
| 1986                       | 11.91          | 1,030.5        | 5.57  | 348.5 | 2.16                                 | 104.8 | 24.91                              | 507.8 | 4.64       | 209.8 | 2.21   | 59.9  | 51.40  | 2,261.4 |
| Average Rate of Increase % | -0.8           | 2.7            | 40  | 49.4  | 78                                   | 73.9  | 6.9                                | 1.6   | 11.5       | 2.9   | 24     | 7.3   | 8.5    | 7       |

Source: Department of Customs

Note: Statistics as of 1986





CHART 6

EXPECTED INCREASES IN THE NUMBER OF CATTLE  
AND MILK PRODUCTION FOR 1987-1997

| Year                         | Total Number of Dairy Cattle | Calves and Heifers | Milk Producing Cows | Raw Milk Production |            |
|------------------------------|------------------------------|--------------------|---------------------|---------------------|------------|
|                              |                              |                    |                     | tonnes/year         | tonnes/day |
| 1987                         | 62,737                       | 27,101             | 35,636              | 74,240              | 203        |
| 1988                         | 71,033                       | 32,073             | 38,960              | 86,118              | 256        |
| 1989                         | 79,985                       | 37,135             | 42,850              | 99,897              | 274        |
| 1990                         | 89,691                       | 41,699             | 47,992              | 115,881             | 317        |
| 1991                         | 100,500                      | 46,102             | 54,398              | 134,422             | 368        |
| 1992                         | 112,833                      | 51,605             | 61,228              | 155,929             | 427        |
| 1993                         | 126,751                      | 58,138             | 68,613              | 180,878             | 496        |
| 1994                         | 142,336                      | 65,455             | 76,881              | 209,818             | 575        |
| 1995                         | 159,774                      | 73,440             | 86,334              | 243,389             | 667        |
| 1996                         | 179,352                      | 82,361             | 96,991              | 282,332             | 774        |
| 1997                         | 201,358                      | 92,446             | 108,912             | 327,505             | 897        |
| Range<br>of<br>increase<br>% | 12                           | 13                 | 12                  | 16                  | 16         |

Source: Office of Agriculture and Economics

- Note: 1) For the period of 1987-91, the following increases are expected;  
Total number of cattle, 12% ; Calves and Heifers, 14% ; Milk producing cows, 11% ; Milk Production 15%
- 2) For the period of 1992-97, the following increases are expected;  
Total Number of cattle, 12% ; Calves and Heifers 12% ; Milk producing cows, 12% ; Milk Production 16%



CHART 7

ESTIMATED RAW MILK REQUIREMENTS FOR THE PRODUCTION  
of DRINKING MILK, INFANT FORMULA AND POWDER MILK

| YEAR               | Expected raw milk production (1) | Expected production of milk products (2) | Expected milk powder production (3) | Raw milk production required (4) = (2) + (3) | Raw milk production shortage (5) = (1) - (4) | Raw milk production, surplus |
|--------------------|----------------------------------|--|-------------------------------------|--|--|------------------------------|
|                    | tonnes/year                      | tonnes/year                              | tonnes/year                         | tonnes/year                                  | tonnes/year                                  | tonnes/day                   |
| 1987               | 74,240                           | 98,185                                   | -                                   | 98,185                                       | -23,945                                      | -66                          |
| 1988               | 86,118                           | 105,850                                  | -                                   | 105,850                                      | -19,732                                      | -54                          |
| 1989               | 99,897                           | 114,245                                  | 15,000                              | 129,245                                      | -29,348                                      | -80                          |
| 1990               | 115,881                          | 123,370                                  | 18,000                              | 141,370                                      | -25,489                                      | -70                          |
| 1991               | 134,422                          | 133,225                                  | 21,600                              | 154,825                                      | -20,403                                      | -56                          |
| 1992               | 155,929                          | 139,795                                  | 25,920                              | 165,715                                      | -9,786                                       | -27                          |
| 1993               | 180,878                          | 146,730                                  | 31,104                              | 177,834                                      | 3,044  | 8                            |
| 1994               | 209,818                          | 154,030                                  | 27,325                              | 191,355                                      | 18,463                                       | 51                           |
| 1995               | 243,389                          | 161,695                                  | 44,790                              | 206,485                                      | 36,904                                       | 101                          |
| 1996               | 282,332                          | 169,725                                  | 53,748                              | 223,473                                      | 58,859                                       | 161                          |
| 1997               | 327,505                          | 178,120                                  | 64,497                              | 242,617                                      | 84,888                                       | 233                          |
| Average increase % | 16                               | 6  | 20                                  | -  | -  | -                            |

Source : Office of Agricultural economics

Note: (3) Plans are now under way to open up a powder milk processing plant with a capacity of producing 10,000 tonnes of powder milk, using 80,000 tonnes of raw milk. Permission from the ministry of industry has been received to open up such a plant in 1989, for 300 days yearly, starting off with at least 50 tonnes daily, increasing production by 20 % yearly, until full capacity is reached.



CHART 8

ESTIMATED RAW MILK PRODUCTION IN RELATION TO MILK AMOUNT OF RAW MILK NEEDED TO MEET PRODUCTION DEMANDS FOR MILK AND MILK PRODUCTS FROM 1987-1997

| YEAR                           | Milk for consumption |            | Infant and regula powder milk<br>Tons/year | Other<br>Tons/year | Total raw milk requirement |            | Present raw milk production |            | Volume of raw milk production compared to requirements given as a % of requirements |
|--------------------------------|----------------------|------------|--|--------------------|----------------------------|------------|-----------------------------|------------|---|
|                                | Tonnes/year          | Tonnes/day |  |                    | Tonnes/year                | Tonnes/day | Tonnes/year                 | Tonnes/day |   |
| 1987                           | 98,185               | 269        | 141,260                                    | 88,940             | 529,373                    | 1,450      | 74,240                      | 203        | 14  |
| 1988                           | 105,850              | 290        | 148,323                                    | 90,720             | 543,871                    | 1,490      | 86,118                      | 256        | 16  |
| 1989                           | 114,245              | 313        | 155,739                                    | 92,720             | 559,692                    | 1,533      | 99,897                      | 274        | 18  |
| 1990                           | 123,370              | 338        | 163,527                                    | 94,700             | 576,615                    | 1,579      | 115,881                     | 317        | 20  |
| 1991                           | 133,225              | 365        | 171,703                                    | 96,790             | 594,786                    | 1,629      | 134,422                     | 368        | 23  |
| 1992                           | 139,795              | 383        | 180,288                                    | 98,209             | 608,209                    | 1,666      | 155,929                     | 427        | 26  |
| 1993                           | 146,730              | 402        | 189,302                                    | 101,120            | 622,574                    | 1,705      | 180,878                     | 496        | 29  |
| 1994                           | 154,030              | 422        | 198,767                                    | 104,230            | 638,740                    | 1,749      | 209,818                     | 575        | 32  |
| 1995                           | 161,695              | 443        | 208,706                                    | 105,870            | 654,350                    | 1,792      | 243,389                     | 667        | 37  |
| 1996                           | 169,725              | 465        | 219,141                                    | 108,370            | 671,754                    | 1,840      | 282,332                     | 774        | 42  |
| 1997                           | 178,120              | 488        | 230,098                                    | 111,030            | 690,275                    | 1,891      | 327,505                     | 897        | 47  |
| Expected Average Increase in % | 6                    | 6          | 5  | 2                  | 2.6                        | 2.6        | 16                          | 16         | -   |

Source: Office of Agriculture and Economics

Note: 1) The production of sweetened and non-sweetened condensed milk will decrease 1% for the period 1987-91 and 2% for the period 1992-97

2) Production of milk for consumption will increase 8% from 1987-91 and 5% from 1992-97. From 1986-87, there is an increase of about 20%.

## Summary

With about 65% of the Thai population involved in agriculture, the development of agriculture cooperatives has come as a valuable tool to improve their standard of living and the country's economy.

One of the many types of cooperatives is the dairy. The dairy industry in Thailand is moving steadily forward and increasing.

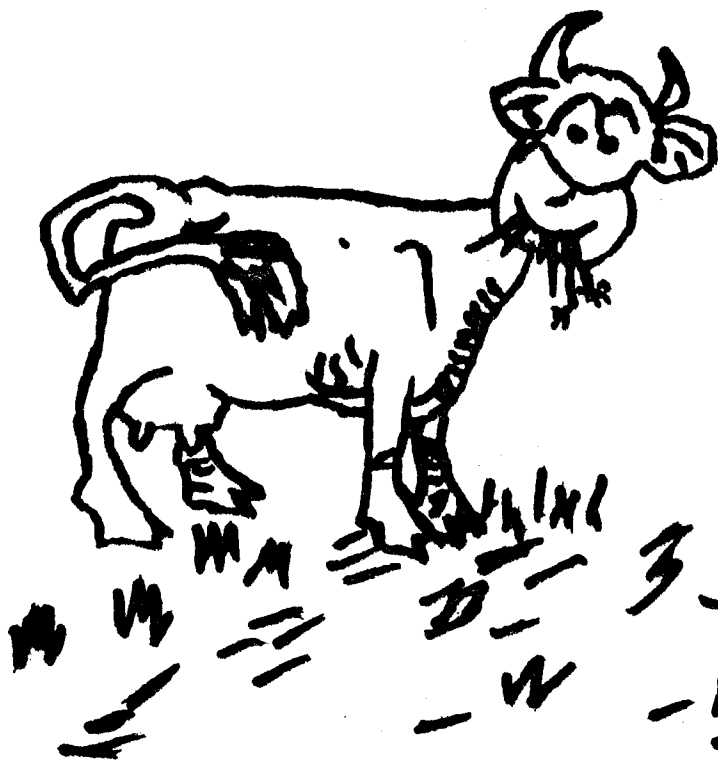
From one single dairy farm initiated by His Majesty the King in 1961, to 17 dairy cooperatives at present and several individual farms, the dairy industry can boast of success.

The dairy cooperatives were established with the help of many government departments and institutions and for equally numerous reasons. Dairy cooperatives were started to help farmers find a market for their products, as well as to help offset losses sustained in other forms of agriculture.

At present, more than 5000 families make their living from dairy farming, and many other people are employed in dairy related industries. The many services offered by the cooperatives and government departments, such as artificial insemination, veterinary and extension, help farmers improve their management and productivity. This type of service will help not only now, but we can build on it and profit from it in the future.

There are still many problems which we face in the future, but with cooperation from all those involved in the dairy industry, we can solve those problems.

Presently, the industry is increasing rapidly, as can be seen through an increase in the number of cattle and production. Eventually we hope to see self-sufficiency in this area, and a better economic situation for all those involved in agriculture in Thailand.



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END

