

**CHAPTER VIII**  
**THAI DAIRY PROBLEMS AND APPLICATIONS OF THE DANISH CO-OPERATIVE DAIRY SYSTEM**

In the presentation in the preceding chapters, you have witnessed the • □□×□ • onna of the Thai dairy industry and the • 88nwio nature of the Danish co-operative dairy system. This chapter • ppro@boa the Thai dairy problems and their s elutions in view of Danish oo-poktin techniques and their • pplioatiw to Thai problems. It deals with tbo problra and then the problems' • olutioM.

**8.1 Thai Dairy Problems to Be Solved**

On tbo basis of dairy farming surveys made by the Ministry of Agriculture and Co-operatives and the author, we can 080 that many dairy farmers in Thailand have • noountuod critical dairy problaa. These problems can bo diridod into those of milk production techniques,<sup>1)</sup> dairy-products production,<sup>2)</sup> and milk marketing.<sup>3)</sup> These • tiolp problra indood retard the Thai dairy industry today:

**8.1.1 Milk-production Techniques Problems**

Dairy farming techniques daily practiced by the farmers, • XOOpt sometechniques Of some • 018Xttiii8 dairy farms, are indeed primitive in many respects when compared with those of Denmark. For example, unscientific cow raising, with some diseases present, causes milk to bo lov in quantity and peer in quality. A milk cow

<sup>1)</sup> Division of Agricultural Economics, Economic Survey On Indian Urban Dairy Farms in Bangkok (2nd. ed.: Bangkok, tbo Division, 1964), pp. 11-14.

<sup>2)</sup> Sannak Sriprang • t al, "Problems of Milk Cows," Agricultural Economics News (No. 157, Dec., 1969), pp. 9-14.

<sup>3)</sup> Nop Anomasiri, "A Co-operative Dairy In Thailand," Land C.-w-tive Bulletin (No. 2, Oct.- Dos., 1966), p. 7.

is not groomed and udders are not properly cleaned with water before daily milking, a milkman's hands and clothes are dirty, and milking equipment is not cleaned hygienically. Consequently, the milk does not have a good flavour, attractive appearance, and uniform composition from day to day. Moreover, many dairy farms do not pasteurise their milk before selling on the home market. Besides these, "the poor system of manure disposal creates a public health nuisance. The small area used for housing cattle together with inadequate veterinary services results in an high rate of mortality and low grade of milk."<sup>1)</sup> All these various problems are retarding dairy farming development in Thailand.

#### 8.1.2 Dairy-Products Production Problem

The farmers cannot keep and process their milk for more economic utility to satisfy consumers' desires and cannot produce other dairy products of better qualities so as to command a better price. Many dairy farms have no scientific milk processing plants of their own for said production (except the Dairy Farming Promotion Organization of Thailand, the Thai-German Dairy Farm, and the Suanjitlada Dairy Farm). Even the few co-operative dairies mentioned have no milk processing plants of their own as yet, but only milk collecting facilities. The main reasons for the scarcity of such main resources are due to lack of capital and lack of technical know-how on the part of personnel. The inability to initiate such resources also keeps the dairy business at a limited degree of development.

Consequently, the dairy farms must sell their raw milk only on the local market. Many traditional dairy farms sell their milk without pasteurisation to consumers. Some dairy farms which are unable to sell their milk because of its unhygienic quality use part of it for another purpose, and the rest of the milk is doubtless allowed to perish. Doing so certainly contributes to the high cost of dairy farm operations and makes the farms unprofitable.

<sup>1)</sup> Division of Agricultural Economics, Op. Cit., p. 45.

### 8.1.3 Milk Marketing Problems

Owing to the inability to produce fresh pasteurized milk and milk products as mentioned above, the farmers have much difficulty in finding a permanent favourable milk market in Thailand. Although they can find a buyer for raw milk, the privately-owned dairy firm, they can only market a portion of raw milk at a low price, because the raw milk is not good in quality and the farmers do not have sufficient bargaining power in the marketing. The rest of the raw milk has therefore to be utilized for feeding pigs, raised as a very small side line, and also perishes in part. For example, the farmers at Ratburi, who raised about 250 milk cows with about 2,000 kgs. of milk yield per day, could daily sell only 1,000 kgs. of milk to buyers at a low price. The rest was used for feeding pigs and dogs. Often some of the farmers, who were refused by the middlemen at the dairy plants, gave the buyers the rest of milk.<sup>1)</sup> As a serious result, the Thai dairy farming businesses have suffered heavy losses in the marketing. Moreover, the producers could not feed their milk cows regularly, due mainly to the great expense. The cows were thus pastured at random all day long without scientific feedings.<sup>2)</sup> In doing so, their daily incomes from the selling were reduced considerably. It caused the dairy entrepreneurs to be in a weak economic position.

In addition, the farmers in the central region at Ayudhya who produced about 4,000 kgs. of milk per day, delivered almost all their milk to a privately-owned dairy in Bangkok some years ago. But at present the farmers can daily deliver about 2,000 kgs. of the milk, because the firm is not in a position to buy milk in the former quantity due to strong competition. Therefore, the raw milk purchased daily remains at the quantity of about 2,000 kgs.<sup>3)</sup> The result of this case is almost the same as for the farmers at Ratburi.

1) News Item, Thong Thai, July 5, 1970. (a newspaper in Thai), p.1.

2) Op.Cit., p.2.

3) This information was collected from the Foremost Dairies Company (Bangkok), Ltd.

The farmers • nboarourad to contact other organisations and firms for marketing of milk, but unfortunately they were refused because these economic units could not extend their business by purchase of additional milk. The farmers were therefore in as difficult a position as ever.

#### 8.1.4 Dairy Problematic Circle

The dairy problems mentioned are MORE or less a consequence of poverty. or low income, of the people. Low income breeds backwardness in all its aspects--undereducation, bad dairy farming techniques, and so forth. The techniques, in turn, breed the production of low grade products, e.g., a low grade of raw milk, which leads to inefficient marketing of the commodity and results in low incomes for the farmers. The problems can be pictured in a circle, which is called here t h e vicious dairy problematic circle.

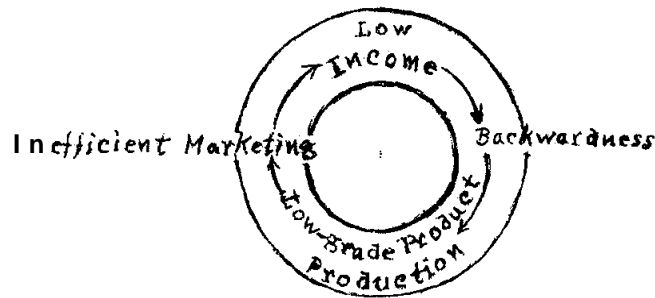


Figure 17

#### The Vicious Dairy Problematic Circle

For the dairy development the circle should be broken in many ways that shall be mentioned later.

#### 8.1.5 Reasons for Not buying Local Raw Milk

The specific reasons why privately-owned dairy firms do not buy local raw milk for the production of dairy products are as follows:<sup>1)</sup>

<sup>1)</sup> "Problems of Raw Milk Utilization", Siam Rat, October 31, 1969, pp. B-11.

1) According to the opinion of the dairy firms' managers, the quantity of raw milk produced daily by the farmers is not sufficient for the daily production of one dairy firm. Because just one firm normally utilizes about 270,000 kgs. of raw milk as the needed input for its daily production of outputs. But the entire quantity of local raw milk produced daily in Thailand is only about 20,000 kgs. Therefore, it is not sufficient to meet even one firm's demand.

Moreover, only a portion of this volume, or about 11,500 kgs. of raw milk, can be delivered by the producers from dairy farms located within 150 km. of the firm near or in Bangkok. The rest of raw milk cannot be delivered to the firm because of the high cost of transportation over a distance of more than 150 kms.

For all the reasons mentioned above, the firms have no reason to buy the local raw milk. The insufficient input would result in higher operating costs of the firms. Purchasing sufficient powder milk from foreign countries for the production of the firms is thus more reasonable, because of lower operating costs.

2) On the dairy technique side, the machines of all the firms cannot be utilized for the production of condensed milk from the raw milk, because the dairy plants have installed the machines for the production of condensed milk from the imported powder milk. If the firms were to alter the pattern of production in respect to input, the machines should be installed for the raw-milk in production. It would cost additionally and there is no reason for the firms to do so.

3) As to the promotion, all the privately-owned dairy firms authorized by the Board of Investment Promotion<sup>1)</sup> to be going concerns for the production of dairy products from imported powder-milk, not from the local raw-milk. Therefore, it is not part of the commitment of the firms to buy the local milk from Thai dairy farmers. According to the opinion of a leading worker of the firm, the Project of Dairy Farming Promotion launched by the Ministry of

---

<sup>1)</sup> A government body under the Ministry of Industry of Thailand.

Agriculture and Co-operatives, has some defects. One of them is that no milk marketing planning or coordination with other government organisations for the sake of development is mentioned in the Project. A consequence of these defects is that the producers do not produce the raw milk but cannot sell their produce because there is no permanent milk market. It is thus not fair to say that the firms do not purchase the local milk simply because no marketing planning is made by the Ministry.

## 8.2 Problems Solution by Danish Co-operative Dairy Techniques and Their Application

The dairy farmers themselves tried to solve their problems as best they could, but problems have been retarding their progress. Especially the marketing problem today plays an important role in the dairy industry.

The ways to be cited in which the farmers have used tried to solve the problems are as follows: First, many dairy farmers contacted the Kasetsart University dairy farm for marketing their produce, but the dairy farm refused to do so because it already had a sufficient volume of its own milk for processing in the dairy plant. Second, they contacted the Dairy Farming Promotion Organization of Thailand for the same purpose, but here the farmers were refused again because this state dairy produces raw milk and purchases only 'this good only' from dairy farmers who have undergone dairy training with this organisation. As a consequence all milk producers have been in a difficult position for a long time.<sup>1)</sup> Third, the milk producers afterwards contacted the Government for aid in solving the problem. The task has thus been assigned to the Ministry to help the people by introducing appropriate measures.

The prime reasons why the Government must assist the people in solving the three dairy problems mentioned above are as follows: First, it deals with foreign trade, i.e., Thailand

---

<sup>1)</sup> Siam Rut, Op.Cit., p. 1-3.

"earns foreign exchange from rice export of more than Baht 3 billion each year but loses much more Baht 450 millions on the import of dairy product." Second, the domestic dairy enterprise is very under-developed when compared with that of Denmark; it should be therefore developed as much as possible so that the domestic dairy products can compete with the imports. Third, the low income of Thai farmers should be raised through more new scientific techniques being applied to the industry. These are important reasons for the Ministry to act.

The measures so far introduced are the establishment of the co-operative dairies to solve their marketing problems and the dairy farming promotion. It is apparent that the co-operatives are not genuine co-operative dairies when compared with the Danish co-operative dairy model, lacking, e.g., co-operative dairy knowledge and capital. The Thai co-operatives have not the necessary facilities they should have. For example, they have no dairy processing plants.

The ministry has also built two milk collecting facilities for the co-operatives, for assembling milk from the farmers with the purpose of solving marketing problems; but owing to the lack of a dairy processing plant they can market the milk only in raw form in the Bangkok-Thonburi market and to only a very limited extent. They also encounter the problems of lack of capital and lack of dairy technology.

Even if the problems are attacked by technical assistance, they cannot be overcome successfully. This may be due to the character of the above-mentioned measures which have been employed by the Government, on the one hand, or the ineffective employment of the measures required over a long period of time, on the other. In fact, the problem still obstructs the industry's progress.

Said dairy problems must be overcome by the people concerned. That is, the relevant knowledge and the technical know-how of the co-operative dairy system and the dairy training system in Denmark should be applied scientifically in Thailand for a possible solution and for Thai dairy development.

### 8.2.1 Applicability of Danish Co-operative Dairy System

It is now sure that there are both dairy problems to be solved and favourable factors for their solution as the preconditions for dairy industry development in Thailand. And it seems to the investigator that the Danish Co-operative Dairy System can be applied if its appropriate aspects are suitably adapted to Thai dairy conditions. Such applicability may be reasoned at some length:

1) **Relevance to Thai Dairy Conditions:** The Danish dairy experience has considerable relevance to Thai dairy conditions, because the essential elements of the System are identical. The essential elements which bear relevancy to the conditions are, e.g., the main economic purpose, the production, the marketing of pasteurized fresh milk, dairy technology, and organization and management, especially production and marketing bear much relevancy. These two functions, as now performed in Thailand, are traditional and unscientific; they should thus be replaced by the said elements.

2) **Highly Scientific Standard:** The Danish Co-operative Dairy System has been highly developed by Danish farmers of high calibre since its birth. Today it is a highly scientific set of ideas, principles, and practices. It can be cited for its usefulness. It has been successful, and has served as a scientific model for other co-operative dairies in many parts of the world<sup>1)</sup> and has been imitated by many operators of many countries. The System can be applied in Thailand as well because of its obvious virtues.

3) **Being an Art and a Science:** The System is an art because it is practical. It is utilized daily to achieve its given purposes in Denmark and other countries. As a science, it is a co-operative science. Its principles and practices in both economic and organisational aspects are taught by Thai professors as a subject of economic studies at, e.g., the Kasetsart University and the Ramkhamhaeng University in Bangkok. There, the science is regarded as a properly typical study for Thai students of economics. Therefore, the System is popularly accepted by highly educated people in Thailand.

---

<sup>1)</sup> Henry H. Bakken and Marvin A. Schaars, The Economics of Co-operative & & & g (New York: McGraw-Hill, 1937), p.57.



4) **Economic Usefulness for Thai Farmers:** The System was created by the Danish farmers for solving economic problems and for developing the economic conditions of small Danish and foreign farmers. It is thus useful for small Thai agricultural producers at least in economic and social respects. For instance, it will give the farmers significant economic benefits of Danish co-operative marketing of dairy products. It will be a imitative type of agricultural economic organization from which the farmers can learn and practice. If organized successfully, it will become a significant tool solving the dairy-product marketing problems encountered by small Thai farmers. Also, it will be an economic organization owned, operated, and controlled by its farmer member patrons for their financial benefit, according to its immediate purpose. As a consequence, such benefits will elevate the plane of living of members on Thai farms. As such it should certainly be an economic lover for the farmers in the future.

Co-operation in marketing, as such, will be a dairy business undertaking amenable to Thai economic forces. Also, the System is a synthesis of elements of economic systems--capitalism, and perhaps communism. It eliminates many weaknesses of the current economic system and prevents some of the extremes to which they go. It is the "via media, via amabili."

Therefore, we need the System in virtue of its considerable economic usefulness. Owing to the great degree of need, the System is to be applied by people of strong will in Thailand without doubt of its success.

5) **Preferring of Co-operative Dairy to Privately-owned Firms:** Besides economic usefulness to the farmers, they, as well as Thai co-operators, prefer the Danish co-operative dairies to privately-owned dairy firms, according to the author's investigation. The Danish co-operative marketing method is better suited to the dairy farmers since it is based on what the farmers have, i.e., patronage and human dignity) the privately-owned marketing method is suited to capitalists since it is based on what they have, i.e., capital.

To clarify the above statement the author is proceeding on the assumption that Farmer X has 40 milk cows and only D.Kr. 100 invest in a stock-type dairy firm. With this sum he can buy 10 shares of stock of the firm. Farmer Y has only 10 milk cows but D.Kr. 400 with which to buy 40 shares of stock. X has thus four times as many milk cows as Y, but Y has four times as much money as X. Usually, X has a far greater interest in the affairs of the co-operative-type dairy firm than Y, because X's product from 40 milk cows contributes more to cost reduction than Y's product from only 10 milk cows. At the same time Y is more interested in the affairs of a privately-owned dairy firm than those of the co-operative-type dairy firm, because in the private one Y would gain four times as much from cost reduction as X. But in the co-operative one X would get four times as much savings as Y. Hence, the co-operative organization in which X, with his greater volume of produce, can have as much say in the management as Y with his larger capital investment, which suits X's purpose better than the private organization in which his voting is restricted to his investment.

As long as dairy business success is more dependent upon patronage than upon capital investments, according to the principles of co-operative marketing, the co-operative form of dairy business is better suited to the business of small dairy products than the capitalist form of dairy business. Capital, though needed in the co-operative dairy, but perhaps it is not so important as the patronage of farmer members which can of itself become partly the basis of capital.<sup>1)</sup> On the mentioned bases, the Danish co-operative dairy, which is the co-operative organization of small farmers, is also better suited to the business of small dairy products than the capitalist form of dairy business.

The other reason for preference is that its main purpose is to further its members' interests. That is, it is organized to secure increased returns, better producing and marketing at cost,

---

<sup>1)</sup> Ibid., p. 12.

and improved plan of living on farms. But the privately-owned firm's purpose is to profit upon investments and to perform marketing services for the benefit of shareholders, who may not be farmers but persons of wealth.

In addition, the co-operative dairy attempts to eliminate competition and to secure monopoly advantages for the benefit of its member; the privately-owned firm attempts the same • li8lnetioa and procurement monopoly advantage, but for the investor. The co-operative dairy, moreover, strives to deter its members from unbridled competition among themselves and from taking competitive advantage of those with whom they must deal. Whereas the genuine co-operative dairy system tends to decentralize wealth among the members, the privately-owned business system tends to concentrate it among the capitalists. Likewise, whereas the aim of the first is to make dairying prosperous, that of the second attempts to make its capital share valuable.

Last, the co-operative is organized by farmers for the purpose of marketing dairy products. Any savings over and above actual costs of operation are returnable to its members on the basis of patronage contributed and not on the basis of the amount of financial investment, such as is found in a privately-owned firm. This principle is the most significant goal of the traditional doctrine of co-operation advantageous to all members.

Owing to the superiority of the co-operative to the private dairy as shown above, Thais concerned are of the opinion that the co-operative is the most suitable one for the solution of farmers' problems. On this basis, the Danish co-operative dairy, which is a kind of co-operative association, is preferred by the Thais.

6) Availability of Danish Co-operative Dairy Experts' Services: This is another reason supporting the possible application of Danish co-operative dairy techniques. Experts have been provided by the Royal Danish Government, under the agreements on dairy farming technical co-operation between Thailand and Denmark, to advise agricultural technicians and dairy farmers on dairying. One of the first Danish dairy experts was Mr. Gunnar Sondergaard, a director

of the Thai-Danish Dairy Farm and Training Centre for a six-year period. One other important expert at the SUO location in the field is Dr. K. Vinthe. Some other Danish experts also advise the Thais on co-operative dairy techniques at Ayudhya and Nakornpathom. They are expected to continue their services in Thailand after the expiration of their terms because of the value of their advice. The availability of the Danish experts' services will make Thai dairy development possible. The applied co-operative dairy in Thailand shall serve as a vehicle of dairy economic progress, as has been the case in Denmark over many decades.

### 6.2.2 Way and degree

In this section emphasis will be given to which, how and how much of the knowledge and know-how of the Danish co-operative dairy model can be adapted for use in Thailand. The first question should thus be which and how much of the two resources can be adapted, according to the scientific point of view. The second question is how the resources should be applied in the country.

1) What add How Much? The answer to the investigator that a number of essential aspects of the knowledge and know-how can be adapted for use in the country. They can be enumerated as follows: (1) fundamental principles, (2) production, (3) marketing, (4) organization, (5) management, and (6) dairy education and training.<sup>1)</sup> We will further determine the nature and the extent of the aspects.

(1) Fundamental Principles: The common principles of Danish co-operative societies which should be specifically implemented in Thailand are as follows:

a. "The co-operative society is governed by its members. This is the principle of co-operative democracy.

b. "All members have the same voting rights; one man, one vote, irrespective of whether the member is a big or small one.

<sup>1)</sup> Participants, Co-ordination, Integration and Marketing (reports submitted to the 6th. Seminar, Stockholm: Swedish Co-operative Centre, 1968), pp. 20-23. (Mimeographed)

This is an expansion of equality, which is another aspect of the democracy.

o. "Membership is open to all persons coming within the scope of the society. This is the principle of open membership and neutrality."

These three basic principles are not only followed by the co-operative dairies but also by all type of co-operative societies in Denmark.<sup>1)</sup> They should be utilized because they are very significant for Thais.

Yet, the fundamental rules formulated by the Danish farmers at Ejeding for their own co-operative dairy should be implemented also, strictly, by Thais, because the co-operative dairy cannot exist without the fundamental rules. They are<sup>2)</sup>

a. "Each member shall be economically responsible in proportion to the quantity of milk delivered." This rule deals with the financial aspect of the co-operative society.

b. "Each member is obliged to deliver as much milk as he can spare from his farm, in a clean, healthy, and good state." This rule is analogous to the contract made among the co-operative society and the members.

c. "Each member shall pay the expenses of the dairy in proportion to the quantity of milk delivered." This rule deals with the operating cost of the co-operative society.

d. "Each member will receive payment for the milk delivered in the same proportion as the other members, and will receive an annual dividend based on the quantity delivered." This rule is a basis of economic democracy.

e. "Each member shall carry out the tasks imposed upon him by the general assembly in accordance with the rules." This rule deals with duty and accountability of the member.

1) Henning Ravnholt, The Danish Co-operative Movement (Copenhagen: Det Danske Selskab, 1950), p. 16.

2) --"Producers' Associations" (paper for the seminar on agricultural and rural development at Kalø, 1962), p. 3.

All these rules, the basis for the Danish co-operative dairies, shall provide a solution to dairy problems if they are introduced into Thailand.

(2) Production: The dairy-products production of the Danish firm deals with various aspects associated with it; but the ones which should be implemented in the country are the bases for payment for raw milk, deduction of payment, and utility creation. These aspects have been treated in detail above; this section contains brief necessary discussions only.

Concerning the first aspect, a price that shall be paid for raw milk delivered by each member varies in accordance with its quality. This pricing method is equitable for milk producers today.

As to deduction, a price fixed for each supplier's delivered milk is deducted if it is of 3rd or 4th grade, inferior milk. It is a measure telling the supplier to sell the 1st or 2nd grade milk only through the co-operative dairy for the continued production of high-quality standard products. The deduction is a measure contributing to the firm's success.

As to the utility creation, it is concerned directly in creating a form utility for the dairy products. The form utility is the result of the alteration of the colour, composition, taste, shape, size, and structure of the raw material in a physical dairy plant in hygienic condition. The goods of form utility can be produced only in a plant in hygienic condition. Having their own form utility, the products can command higher prices. This utility creation concept is a cardinal one for Thai dairy farmers to realize; if they are not aware of it and have no implementation, their co-operative dairy may not achieve its economic purpose.

(3) Marketing: Here we mean the marketing operations which include various essential aspects; but the significant ones are securing marketing information, market researching, storing, packaging, standardizing, grading, branding, financing, transporting, controlling quality, buying, and selling. These marketing functions have to be performed to get the goods from the milk producers and the firms

to the middlemen of consumers. The major objective of marketing is the sale of dairy products to satisfy human wants in the pursuit of profit. Especially the selection, grading, branding, and quality control should rank at the top for Thai dairy farmers. If scientifically performed, these practices will overcome Thai marketing problems. They are cardinal marketing strategies, which contribute greatly to a firm's success.

(4) *Federated Type of Organization, the Structure:* The Danish co-operative dairy is based on the dairy farmer. The farmers organize, own and manage their primary co-operative dairy independently to achieve their economic purpose. When a number of primary co-operative societies arise in a district of Denmark, a district dairy organization is set up by and around the local undertakings on a "bottom up" basis to meet the need for co-operation and co-ordination among themselves for their own growth. The local undertakers are simultaneously the members of the association. Later, when a number of associations have been formed, they in turn form a provincial association to meet the need for dealing with matters of necessary importance. The associations are simultaneously members of the provincial associations as well. Similarly, the provincial associations eventually co-ordinate in setting up a national federation to render educational and foreign representational services. This federated type of organization is the typical and successful one that Thai dairy farmers should follow when they set up a co-operative organization.

(5) *Management, the Functioning:* Management is a key component of co-operative dairy administration. The firm's success depends considerably on efficient management. It is performed by the firm's managerial organs: General Assembly, Board of Producers, and the Manager. The performance of each organ differs from that of the others to a certain degree. The General Assembly devotes more time and effort to administrative functions, such as formulation of broad policy, and most to the managerial functions. The Board of Producers devotes more time to managerial functions than that of the first organ and most to

administrative functions; it controls mainly the daily work of the co-operative dairy and appoints the Manager. The Manager devotes most of his time and effort to managerial functions, day-to-day operations of the venture, but spends the rest of his time in administering. He works under the Board of Producers and is responsible to this executive committee.

These management aspects are valuable concepts that should be introduced to Thai farmers, who have no knowledge of scientific co-operative management, in order to manage their co-operative dairy activities in the right way.

(6) Dairy Education and Training:<sup>1)</sup> The success of the Danish co-operative dairy enterprise depends greatly upon the vigilance of well-trained members, dairymen of high calibre. Many of them were trained in the dairy schools at the Danish dairy schools. The dairy training, one of the training activities, has as its main purpose the training of dairymen in dairy science to be capable personnel, as required by co-operative or private dairies in Denmark. At the dairy schools the training is systematized in the form of an eight-month course in the theory of dairy science. The curriculum consists of both dairy and related courses, such as Dairy Theory, Physics, Chemistry, Bacteriology, Book-keeping, and Machinery. Most of these subjects are introduced to students by lectures. However, all students are required to take part in laboratory, to attend study circles, and write individual papers. They are also required to have practical training in book-keeping, dairying techniques, and dairying machinery, to complete the course successfully.

To attend the course, an applicant must hold the dairy apprenticeship training certificate<sup>2)</sup> and have additional training experience of few years at a co-operative or private dairy. On completion of the final examination, a certificate is awarded on

---

1) Einar O. Petersen, Danish Dairying (Copenhagen: Technical Dairy Publishing House, 1963), pp. 129-133.

2) One of the employee training methods in dairying, i.e., mainly job-training. To be admitted to the training, healthy people of 15 years or more must have completed a primary school course and must have passed a technical aptitude test. A qualified person is trained in a dairy plant and a dairy school in Denmark for 3½ years to earn the certificate.



which is obtained the grade obtained for each subject as well as the final grade. It is apparent that after a few years of practical experience, one who has passed the final examination can assume a position as superintendent, manager, or foreman of a co-operative or private dairy.

When applied carefully in Thailand, such dairy education and training will eliminate the problem of such backwardness which is evident in low labour efficiency, stemming from lack of education and training. Thus it shall eliminate milk production problems.

2) How to Apply?: Now we come to the problem of how all the relevant knowledge and know-how presented above could be applied in Thailand. The following feasible ways and means, in the light of Danish experience, are recommended as follows:

(1) People and Agencies Responsible for the Application: To ensure co-operative dairying's success in Thailand, the initiative should be taken by Thai milk-production farmers and government agencies dealing with dairy farming and co-operative dairies. Today such agencies are the Department of Co-operative Promotion<sup>1)</sup> and the Dairy Farming Promotion Organization of Thailand. The reasons for the application by the farmers and the agencies are that (1) the farmers themselves face the problems and need the solution provided by the Danish co-operative dairy techniques and their application and (2) the Organization directly administers the dairy farming promotion activities, and the Department administers the promotion activities of co-operative dairies and other co-operatives in Thailand today. It is thus expected that they could be in charge of the application and can work well together. In implementation, these agencies and the producers work together on the application of the knowledge and know-how in accordance with the following suggested ways.

(2) Organization: The dairy farmers of higher calibre

<sup>1)</sup> Formerly the Department of Land Co-operatives. It was merged with other departments of co-operatives into the Department under the Ministry of Agriculture and Co-operatives of Thailand Government.

will be guided and assisted by the Department's co-operative officials in both technical and economic aspects. The producers alone may not be able to deal with the co-operative dairy organization at the initial stage, except with co-operative officials, because of low productivity. The producers and the officials will first deal with the formation of external and internal organization of a primary co-operative dairy. In doing such work, the first sequence of events will usually occur as in the following:

The organizational basis of the co-operative movement to be implemented is that the co-operative dairies must be organized on a federal basis at three levels of external structural organization-- local, regional, and national, the formation of these organizations to be based on 'bottom up' basis. That is, when a number of primary co-operative societies have arisen in a region of Thailand, a regional co-operative association should be set up by the societies in the region. When a number of regional co-operative societies have been set up in various regions, they in turn should operate in setting up a national co-operative dairy federation. Although the federal type of organization has some disadvantages, such as slow process of formation, it has more advantages: the federal association is built from the ground up, an importance of self-governing local being recognized; authority, control, interest and responsibility rest in the locals; and the federal association comes into being in response to the needs of the locals; and thus they form the most important mainstay of the association by giving their local support to the larger associations.

(3) Fundamental Principles: In organizing the primary co-operative dairy, this sequence of events usually occurs: an idea about the Danish co-operative dairy model; the formation of an organizing committee to nourish the idea to fruition; the conducting of an intensive community survey by the organizing committee to find out whether the co-operative dairy establishment is possible in a Thai community; the organizing of a general meeting of Thai silk producers to which the report on the community survey is presented; and if the establishment is feasible and desirable, the formation of the organization committee for drawing the capital by-laws for the new firm, financing the venture, and the launch of the

permanent board of producers to replace the organizing committee and others, until the venture comes into being.


The significant activity is the drawing of the by-laws for the firm. To be consistent with the Thai co-operative societies act,<sup>1)</sup> these operating rules must consist at least of co-operative registration for obtaining juristic status at the office of the registrar of co-operatives, co-operative privileges such as fiscal privileges and legal privileges as mentioned in the act, and co-operative nature. The last aspect must cover the fundamental principles of Danish co-operative dairies enumerated above to be strictly practiced for the firm's success. It should also cover the economic purpose of the dairy, prevention of the co-operative dairy from becoming a capitalistic system, member selection, delivery of milk, loans and liabilities, responsibilities of members, general interests of members, position and functions of the board of producers, conditions of employment and rights and liabilities of the manager, accounts and treasurer's duties, and auditing practices. These important aspects should be written in the by-laws for practical purposes. The completed by-laws shall be the operating rules of the dairy.

(3) Production: In practice, as the by-laws are drawn by the organizing committee, the obligation of milk delivery, the bases for payment, and deduction from the price fixed should be written down in the by-laws as provisions with which the parties have to comply strictly. Particularly, the members must be told in advance about the milk delivery mentioned in the by-laws; that they have been obliged to deliver to the co-operative dairy all the milk yielded by their healthy cows with the exception of such quantities as are used for their own domestic purposes. Failure to comply with the obligation to deliver shall be considered illegal resignation. They must be told further that the condition

---

1) The law empowering the organization of Thai co-operative societies at the experimental stage was the Associations Amendment Act of 1916. In 1928 when the co-operative development was well under way with fair satisfaction, the Co-operative Societies Act of 1928 was promulgated. In 1943 the Act was revised to make it more effective as a promotion and control machinery. In 1966 the Co-operative Societies Act of 1966 was promulgated in Thailand.

of all milk delivered to the dairy shall be clean, fresh, well-cooled, and unadulterated. Delivery of milk from infected cows shall not be permitted. Milk from cows that have just calved shall be withheld for the first two days after the calving.

If the quality of the milk delivered does not satisfactorily comply with the above requirements, the dairy shall be obliged to return the milk. In the event that a farmer member delivers adulterated milk, he shall be liable to indemnify the dairy for any loss, and if the member was aware of the adulteration, he shall further be liable to a fine. And in the event that within two consecutive financial years a farmer member has not delivered milk to the dairy for at least six months, his membership shall be terminated. If the by-laws do not contain all of these provisions, the members shall do as they wish in delivery, according to the author's 

The concept of high grade utility creation, as presented above, should be also written down in the by-laws in order to compel the firm to create the high grade utility for dairy products as required by consumers. The firm must always keep in mind that its prime objective is the sale of dairy products with real want-satisfying properties only. If the commodities are produced without applying this concept, they will be marketed at lower prices because of the atrocious competition in Thailand.

(5) Management The following significant managerial aspects of the Danish co-operative dairy model should be written down in the by-law by the organizing committee as they are drafted for guiding the firm's personnel in day-to-day management. Such aspects are the managerial organs--the General Assembly, the Board of Producers, and the Manager. The General Assembly must be the supreme authority organ of the co-operative dairy within the framework of the by-law and statutory provisions of Thailand. All Thai farmer members must be entitled to attend the general meeting. The ordinary general meeting should be held every year to consider an annual report on the firm's affairs in the year under review, to approve the audited accounts and balance sheet, and to elect the Board of Producers and the president for the firm. In addition, the extraordinary general meeting shall be held when

deemed necessary by the Board of Producers, or when at least one fifth of all the members so demand in writing at the same time stating the topics to be discussed. The supreme-authority organ has other significant functions to alter the by-laws if necessary and to dissolve the co-operative dairy if it is in bad condition.

The Board of Producers should be the superior management of the co-operative dairies in Thailand. It elects the vice-president and a treasurer for the keeping of accounts. It has the right to appoint and dismiss the Manager, and fixes his salary as well as the president's fee. It must supervise the activities of the firm and see to it that they are managed warrantably and in accordance with the by-laws of the firm. The Board of Producers must insist that it be kept informed of all particulars necessary to monitor these purposes, and if need be, take steps to obtain such particulars. Likewise, it should take care that the firm's accountancy is organized and executed satisfactorily and adequately. It must co-operate with the firm's manager to see to it that the milk and the dairy products receive the treatment warranted by the economy of the firm and the quality of the products. It should be legally competent to transact business when half of the members are present. The majority of the Board of Producers shall bind the co-operative dairy. Meetings of this organ shall be held as often as the president deems necessary, or when at least two members of the Board of Producers so demand. All aspects not mentioned in the by-laws.

As to the Manager, his essential functions and duties should be contained in the by-laws to inform the firm's members. He is in charge of the daily operations of the firm. He will employ, supervise, and even dismiss assistants or employees. He will be required to keep the Board of Producers informed of all factors relating to the operating of the firm. Likewise, he shall comply with the regulations laid down by the Board of Producers as well. As to the duties as mentioned in the by-laws, the Manager is only an employee. The co-operative dairy which he partly manages is not his; it belongs to the milk-producing farmer community. He is an ordinary agent of the Board of Producers. As such, he can

be removed by this organ at any time. Manifestly, the Manager, like any other employee, has only such authority as he is granted by the Board of Producers and outside the scope of that authority do not normally bind the firm. The Manager's degree of independence from the Board of Producers in performing the managerial functions may vary to some extent when the dairy business is tenuous and calls for strategies far beyond the normal competence of their superior management.

(6) Dairy Education and Training: The structural aspects of the theoretical training system of Denmark must be introduced into Thailand; otherwise the problems will not be solved for long. The aspects should be formulated as a one-year course, in addition to a dairy course already running in Thailand,<sup>1)</sup> for those who wish to be the personnel of the co-operative dairies. This course will contribute directly to personnel development for the economic co-operative ventures in the future.

According to the theoretical dairy training system, training activities are administered by the dairy ministry. In Thailand, an institute for the study and research on dairies, namely, the Training Centre of the Dairy Farming Promotion Organization of Thailand, should also be in charge of organizing and operating the training activities along the administrative lines of the Danish system. But the difference between the Danish system and the applied one is, of course, the course subjects, partly because the Danish system is being adapted to a new environment. The applied curriculum should, according to the actual needs of education on co-operative dairy and dairy science, be composed of the following courses: Dairy Theory, Physics, Chemistry, Bacteriology, Dairy Machinery, Co-operative Philosophy, Principles and Practices, Co-operative Law and By-laws; Principles of Co-operative Accounting, Co-operative Marketing of Dairy Products, Dairy Farming, Co-operative Organisation and Management, Mathematics, English, Danish, Agricultural Science, Agricultural Economics, and Statistics.

---

<sup>1)</sup> The course is offered by the Training Centre. It is one-year training course in dairy farming for young students. Most emphasis in the course is placed on practical work in connection with running a dairy farm.

The emphasis of this pre-service course is put on both the theoretical and the practical aspects required by the students.

The proposal is based on the assumption of a one-year program, with nine months at the institute and three months practical training fully supervised by the institute. The period should begin in May and concluded with a final examination a year later. On the completion of the course, a certificate of the institute shall be awarded on which is stated the grade obtained for each subject as well as the average grade.

To attend the course, Thai applicants who have completed a secondary school's five-year course or a high agricultural school's three-year course should be admitted. The applicants holding the Training Centre's diploma can be admitted to the applied course to meet the urgent demand for well-trained dairy farmers at present. It is expected that one who holds the certificate, after some years of practical experience, should become a well-trained worker for dairy farming and co-operative dairies in Thailand.

In addition, the institute should organize a short course in dairy farming for farmer members of the ventures. The course should emphasize the practical running of a dairy farm. Through the training the trainees can learn the technical know-how from well-trained and experienced trainers in the line of dairy farming and can get practical experience by doing the actual work. The trainees can learn not only dairy farming fundamentals in both technical and economic aspects, but also how to apply the fundamentals to a wide variety of practical dairy farming problems. As a result, the training will solve the technical problems of milk production on farms.

(7) Marketing Operations: To minimize marketing problems, some highly significant aspects of the marketing functions of a standardizing, packaging, grading, and quality control of the dairy products of the Danish co-operative dairy must be mentioned in the by-laws of the firm, to guide its personnel in day-to-day marketing operations. In this connection, the managerial organs of the firm have further to take responsibility in the performance of marketing functions as follows:

As to the standardizing of tnsb milk, the milk intended to be marketed must come from herds free from bovine tuberculosis and contagious abortion under constant veterinary supervision. Such milk should already be cooled after milking on the farms. Before selling, it must be tint processed to a "high-grade quality" standard by a firm with modern equipemnt. In the processing, it must be long-time pasteurized and • tandmdisad to contain 3,8 per cent fat.

Packaging, in tbo light of Danish • xperimoe, should be done la the following ways: Tbs fresh pasteurized milk is scientifically filled into economical plastic bags of 1/4 litn (250 c.c.) and 1 litre (1000 c.c.) sizes. The bag is printed at least with the words "Milk," the producer's name and address, net weight of milk, the date of processing, end an established brand name. The commodity should also be filled into disposable paper containers of 237 c.c. (½ pint) and 474 c.c. (1 pint) sizes with the same information, to supply the home market. The cost of packaging in these ways is less than that of using bottler.

Standardized butter must be produced to a "high-grade quality" standard. That is, the butter must be produoad from the well-cared-for milk from tubercle-free herds; contain no preservatives other than salt; not be colored with aniline dye; be produced from cream already pasteurized et a temperature of 170°f.; snd contain at learnt 00 per cent butter tst and not more than 16 per cent moisture.

The butter produced should be wrapped in aluminium foil lined with real parchment, the toll to be printed with the word "Butter," its producer's name and address, the net weight of product (250 grams), the production date, and the established brand name. It must be kept in oold storage for a higher utility purpose, and placed in a refrigerated truck when delivered within the country.

On the standardizing of condensed and dried milk, it must be made of "the highest grade" quality. That is, the product must be produced from the tint class raw-material only from tubercle-free herds; not bo produced from colostrum milk; not contain preservatives; not show coagulation; be produced by dairies of hygienic



condition; and be produced from the milk pasteurised to not less than 80°C.

The condensed milk is generally packed in labelled cans of 14 ounces (396.83 grams) size for supplying both home and foreign markets. The label must be printed with the words prescribed by Thai law, such as the brand, and the producer's name. The dried milk is filled into labelled cans of, e.g., 14.5 ounces, the label printed as mentioned above. All the cans should be packed in strong paper containers and stored for more utility purpose.

All the information printed on the containers and labels is necessary because it will help consumers in buying the right products for consumption at the right prices.

As to grading and quality control, the products must be continuously graded and strictly controlled by the dairy farms and co-operative dairies and state institutions concerned, such as the Department of Livestock under the Ministry of Agriculture and Cooperatives. The quality control of milk should extend from the farm and go up to the retailer. The farmers should be advised to produce high quality milk only and the firms should be held responsible upon delivery. The State officials should make both announced and surprise visits to the farms and take samples of dairy products for testing. If the test shows that the products do not conform to the standard of quality prescribed, the firms should be fined severely. Samples should be taken by State officials from all shops selling the products, for the same purpose.

Apart from government quality control, the firms should have laboratories to test the quality of the dairy products regularly for uniform quality. The main purpose of the test is to know whether the products' qualities are up to the prescribed standards. If not, the products must be raised at once to the standards.

The firms should be subjected to the grading for maintaining quality standards. That is, on the basis of the Danish system, the firms, upon request, should submit a sample of the product to State officials for weekly grading. The samples should be judged and reported weekly, according to quality standards and requirements. If

the product is found below the standard requirements, its producer shall be given advice regarding the defects. If the firm neglects to comply with the advice, it shall be fined severely.

The most significant point to be remembered is that continuous grading and quality control are necessary factors which enable the firms to exist as successful economic units for serving their members effectively.