

The Philippines:

Enterprise-driven dairy development 1





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The Philippines: Enterprise-driven dairy development¹

Chapter 1. Background

Brief history

The early 90s marked the start of the implementation of the Medium-Term Development Plan for Dairy (1989-1993) and its accompanying Dairy Industry Development Model (DIDM).² This document was prepared in 1988-89 and funding of the program was approved in 1990. The dairy plan signalled a new regime for dairy development in view of its near total termination in 1986 with the declaration from the agriculture department that all support for dairy activities would be stopped and that the Philippines would simply import all its dairy requirements. The government agency involved in dairy development, the Philippine Dairy Corporation, was then in the process of dissolution and its assets were being prepared for public auction.

In 1988, a new agriculture secretary (Secretary Carlos G. Dominguez) met the dairy farmers engaged in the sector and reconsidered the previous position of the department. It was this decision to give dairy a second chance that initiated the preparation of the new dairy plan.

The most distinct character of the new plan was the strategy that was initially called zero-base approach. This time, the department of agriculture was not going to support dairy all over the country. Instead, dairy would be introduced and assisted only in areas found suitable based on pre-determined parameters. Based on an assessment of previous dairy efforts, the following weaknesses needed to be addressed: dairy production sites were too dispersed, selection of farmer participants was arbitrary and often based on political considerations, the few existing processing facilities were either too old or too big for the current production volumes, the cooperatives were not functioning as enterprises.

These lessons guided the designing of what was called the dairy industry development model (DIDM) or the dairy zone model. The plan defined each component of the system which then became the content of dairy orientation seminars for prospective entrants. Only areas that passed the set criteria were considered as dairy development sites. As found in Annex 5_ containing the detailed criteria, the model provided "musts" for the production unit (at least four adjacent villages, access to forage area, water, etc.), the collection center (quality testing capacity, handling and delivery equipment), the processing facility (appropriate capacity specified), the market base (located within 35 kilometre radius of urban center as target market, and the appropriate dairy enterprise or cooperative.

In the early 90's three of these zones were established: in Davao and Cebu in areas where no dairy activity had ever taken place and in Cagayan de Oro/Misamis Oriental where there were

¹ Prepared by Sally Bulatao, former Administrator of the National Dairy Authority and Co-Founder of the Dairy Development Foundation of the Philippines, Inc., for the FAO Regional Office for Asia and the Pacific's Lesson Learned Country Studies towards a Regional Strategy Paper for the Smallholder Dairy Sector, 14 September 2007.

² Attached as Annex 5 is a description of the dairy industry development model.



some dairy farmers from an earlier program. From previous years too, there were dairy operations in Laguna and Bulacan, both geared to supply the Metro Manila market. Attached as Annex 6 is a summary of historical financial indicators of the major dairy federations in five dairy zones. These federations run the business of the coop using their own capital, pay a monthly lease to the NDA for the use of the plant, hire their own staff and cover the maintenance and repair of the facilities and pay dividends to members. Although there are other visibly more profitable dairy enterprises in the area, data from private commercial groups are not regularly accessible.

In 1992, the Philippine Carabao Center was created by virtue of Republic Act 7307. PCC would pursue the conservation, propagation and promotion of the water buffalo as a source of milk and meat, in addition to draft power and hide.³ In dominantly carabao-based dairy areas, it is the PCC that assists the dairy farmers. In areas served by the NDA, farmers with all types of dairy animals receive technical support.

In 1993, the Dairy Confederation of the Philippines, Inc. was organized as the first national organization of smallholder dairy farmers.⁴ The Dairycon held its first National Dairy Congress in Cagayan de Oro City attended by its five founding dairy federations. Since then, the Dairy Congress held initially every two years then later annually, has been an occasion for various dairy groups to come together for an exhibit of dairy equipment and products, for technical fora and a general assembly. The 10th National Dairy Congress was held last February 2007

In 1995, the National Dairy Development Act (Republic Act 7884) was enacted creating the National Dairy Authority and indicating that dairy would be pursued as a matter of national policy.

Table 1, below, captures the transition of the local industry since the enactment of the National Dairy Development Act:

³ *Sosimo Ma. Pablico, Changing Lives: Beyond the Draft Carabao, Philippine Carabao Center, 2006.*

⁴ *Doing their Dairy Best in Davao, Dairy Development Foundation of the Philippines, Inc., 1994.*



Table 1. Philippine Dairy Industry Indicators

| Indicators | 1995 | 2000 | 2005 | 2006 |
|---|----------|----------|----------|----------|
| Annual milk prod'n in million liters | 12.11 | 10.21 | 12.34 | 12.87 |
| Total dairy herd | 21,054 | 21,100 | 26,344 | 28,395 |
| o Cattle | 11,145 | 7,780 | 11,733 | 13,092 |
| o Carabao (Buffalo) | 8,134 | 11,943 | 13,606 | 13,648 |
| o Goat | 1,775 | 1,377 | 1,005 | 1,655 |
| Total dams and does | 9,687 | 10,254 | 12,679 | 13,255 |
| o Cattle | 5,543 | 3,550 | 5,210 | 5,669 |
| o Carabao (Buffalo) | 3,360 | 5,950 | 6,820 | 6,879 |
| o Goat | 784 | 754 | 649 | 707 |
| Dairy import cost (CIF – in US\$ million) | 438.29 | 402.17 | 421.33 | 457.30 |
| Dairy import volume ¹ in LME (in million liters) | 1,605.14 | 1,853.16 | 1,353.39 | 1,510.68 |
| Per capita milk intake in liters per year | 16 | 16 | 19 | 19 |
| Number of farm families engaged ² | 4,066 | 8,197 | 13,077 | 14,347 |
| Total employment in the dairy industry | 4,066 | 8,197 | 17,020 | 19,583 |
| Number of dairy enterprises | 58 | 118 | 289 | 315 |
| Number of children supplied in milk feeding programs | 12,750 | 20,932 | 96,167 | 29,843 |

¹ Import volumes are net of re-exports by importer – processors.

² First survey of farmers engaged in dairy was conducted in 1996 by the Bureau of Agriculture Statistics.

In the mid90's, government experimented with big commercial farms by establishing three of them in different parts of the country. Each one was stocked with some 200 animals, provided with milk processing facilities and managed by cooperatives. By the year 2000, all three projects have been dismantled. Each of these commercial farms failed to sustain their operations: unable to amortize loans used to set up the facilities, ran out of funds to cover overhead that included farm personnel. This failure may only have underlined the lesson that small producers maintain a competitive edge based on the low overhead incurred per farm. Today, bigger private commercial farms that raise their own dairy stocks maintain raw milk supply arrangements with small producers.

In 2001, the NDA returned to the dairy zone model. There are 15 dairy zones throughout the country.⁵ A profile of these zones is attached as Annex 7. More information on the dairy zones and emerging zones is contained in *Philippine Dairy Zones (2007)*, a booklet published by the National Dairy Authority.

⁵ < <http://nda.da.gov.ph/dairyzones.htm>>. This site contains maps and profiles of the zones.



Industry overview

The Philippines' dairy industry consists of two distinct sectors. One is the milk powder based sector that imports, re-processes and repacks milk and milk products. The other is the liquid milk sector that has its imported UHT milk component and the locally –produced fresh milk component.

Although Filipinos are generally considered non milk drinkers with consumption at 19 kilograms per year, the Philippine dairy market, including the market for imported milk, generates over US\$1 billion in revenues annually. 44 percent of the demand for milk is concentrated in Metro Manila.

The two players in the dairy market – the importer-reprocessors and the local producer-processors are very distinct from each other. The importing sector is dominated by three importer-processors that accounted for 55% of total imports in 2006. Over 80% of milk product imports is in powder form.. The importer-processors also import ready to drink milk. Local milk producers supply barely one percent of total supply in LME or about 30% of the liquid milk supply.

The following table shows the markets shares of the two sectors in the milk industry.

Table 2. Market shares in the liquid milk market

| Market Shares | | | |
|-------------------------------------|-----|-----------------------|--------------------------------|
| | | Importer-reprocessors | Local milk producer-processors |
| Total milk and milk products market | 100 | 99% | 1% |
| Liquid milk market | 3 | 70 | 30 |
| Powder and other milk products | 97 | 100 | 0 |

Annex 9 shows a breakdown of the components of the liquid milk supply of the Philippines. In 2006, local milk production was about 13 million kilograms. In gross weight, this represents 5% of total supply. In terms of liquid milk equivalent, local production barely accounts for one percent. In the liquid milk category, local milk accounts for about 30 percent of supply.. Although liquid milk continues to account for a small portion in the big dairy scheme, it started to gain significance when imports of ready to drink milk in tetrapaks doubled from 2000 to 2005.⁶ This is shown in the table of imports attached as Annex 11.

This industry structure may be gleaned from the Milk Price Chart in Annex 3 with the liquid milk going through a simple trading route compared to the local milk production-processing-distribution system that involves many stages and, thereby, generates more employment and rural incomes.

Annex 4, the Milk Flow Chart, is complemented by the table of imports in Annex 11 to profile the entire dairy market. The actual product mix of the commercial players may only be deduced from import figures.

⁶ Import volume of ready to drink milk increased to 45,710 metric tons in 2005 from 22,080 metric tons in 2000. Over the same period, the cost of these imports tripled to US\$33.95 million from US\$11.65 million.



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The local dairy farm sector is small comprising of 13,000 families and some 300 dairy enterprises. The total dairy herd consists of some 28,000 head out of a total livestock population of 9.6 million. The single biggest obstacle to dairy development is the shortage of dairy animals. Hence, programmes to upgrade local animals to dairy breeds are dominant livestock interventions. Recent pronouncements from the Department of Agriculture has indicated the intent to concentrate on the upgrading of native carabaos.

Located within dairy zones, smallholder dairy farmers (with 2 to 10 milk animals and bigger producers (with 20 to 400 milk animals) operate side by side. Annex 8 shows the result of a 1992 survey by the Bureau of Agriculture Statistics indicating that 4,194 or 85% of 4,957 farmers surveyed owned one to four dairy animals. Including the farmers owning five to ten dairy animals, the percentage of smallholder dairy farmers goes up to 96%.

Coffee shops, hotels and restaurants, supermarkets and small groceries make up local milk's commercial outlets that absorb about 60 percent of production. Local government units that sponsor milk feeding programs absorb about 40 percent. As provided by law⁷ and implemented by the National Dairy Authority, smallholders dairies are given priority as suppliers of government-sponsored milk feeding programs. The significant impact of milk feeding on decreasing the incidence of malnutrition encourages local governments to support these programs. The concept of nutrition for the children and income for the farmers is highly appreciated by local officials for social and political reasons.

⁷ *The National Dairy Development Law (Republic Act 7884) provides: "SEC. 16. Nutrition Programs – The government's nutrition programs requiring milk and dairy products shall be sourced from small farmers and dairy cooperatives in coordination with the Authority."*



Chapter 2. Situation Analysis

Important trends that contributed to dairy development

From 2001 to the present time, a number of trends in the local dairy sector have contributed to accelerated development. These factors indicate that collaborative efforts among national and local government and dairy enterprises and support through official development assistance have been important growth movers. Operating in a trade regime of liberalization, the local dairy sector of the Philippines hardly enjoys any protection with tariffs on dairy imports down in the range of 0 to 3%. Quality assurance received a big boost in recent years highlighted by the introduction of milk payments based on quality in some zones. The promotion of smallholder dairy is envisioned by law and by plan. Following are the relevant provisions of the National Dairy Act of 1995:

SEC. 3. Objectives – The objectives of this Act are as follows:

- b) To give support and assistance in the production, processing and marketing activities of all those engaged in the business of producing milk and other dairy products particularly rural based small dairy farmers through the provision of necessary support systems;
- c) To encourage and promote the active participation of farm families, rural cooperatives and the private sector recognizing them as principal agents in the development of the Philippine dairy industry;
- g) To develop and disseminate appropriate smallholder-based dairy technology;

SEC. 11. Dairy Cooperative and Farmers' Organizations – The Authority shall help organize small producers and processors of milk into cooperatives or other forms of organizations to achieve the purposes of this Act including the following:

- a) To facilitate collective arrangements that will enable cooperatives to acquire dairy animals, feeds, veterinary and other supplies, materials, equipment, services of all kinds and other dairy inputs under favorable terms;
- b) To provide a forum for the members of cooperatives to discuss common problems affecting production, marketing and the cooperatives' relationships with the Authority;
- c) To help design credit systems that will provide loans, grants and such services as may be required, to dairy cooperatives and duly accredited people's organizations;
- d) To assist cooperatives in developing market channels and in negotiations for bulk outlets of milk output.

SEC. 16. Nutrition Programs – The government's nutrition programs requiring milk and dairy products shall be sourced from small farmers and dairy cooperatives in coordination with the Authority.

The official plans before and after the passage of the law, likewise, supported the development of smallholder dairy as contained in the Medium Term Dairy Development Plan of 1989-93 and the Dairy Road Map for 2004-07. As dairy enterprises progressed over the years, private producer-processors and the cooperative enterprises found ways to work with one another.

Following are those trends and their impact on dairy development:



Participation of local governments. Local government engagement has moved up to the provincial level involving provincial governors and provincial boards, a marked improvement from the time when only village and town or city officials supported local dairy efforts. In particular, four provincial governments have become active partners in the installation of dairy zones in their provinces. With ample explanation, provincial governors have agreed to follow the specifications of a dairy zone, often giving up the traditional way of distributing animals to all areas ending up with very dispersed stocks and unable to sustain an enterprise. Under such partnerships, the province provided program counterparts in the form of land for the plant site, sponsorship of milk feeding programs, working capital loans for the dairy enterprises, deployment of provincial dairy program staff and other forms of assistance.

Breakthroughs in appropriate technology for long life milk. In the absence of guaranteed public or private procurement of milk produce which is the case in most countries, milk producers in the Philippines have no guaranteed market. As such, the burden of managing the product mix is on the enterprises at all levels from farm to retail outlets. In this context, the breakthrough was realized with the design and fabrication of a water retort facility⁸ that made possible the production of long life sterilized milk in pouches for commercial distribution and for feeding programs in remote areas. The first facility was installed in Davao City in Mindanao in 2002, a second one was put up in Cebu City in the Visayas in 2006 and a third one has been commissioned for installation in Lanao del Norte in Mindanao. The feasibility study and initial test runs of the retort facility was funded by the Dairy Development Foundation of the Philippines, Inc. Subsequently, when it was ready for commercialization, the National Dairy Authority initially funded the fabrication of the first unit but it has been repaid by the dairy federation that runs the plant where it was installed. The facility requires a fill-seal machine which was privately funded through a loan sourced by the cooperative. The second and third units are privately funded by the cooperatives. Already in product development are other milk products in standup aluminum pouches including evaporated milk and condensed milk which are widely consumed items in the Philippine market.

Availability of smaller processing facilities. With the training of local engineers and fabricators and access to Thai, Taiwanese, Indian and Chinese dairy equipment suppliers, the old practice of commissioning dairy plants on a turn-key basis has been abandoned. In fact, even old dismantled plants have been reconfigured to suit the needs of smaller production sites. Some of these are privately financed like the processing plants of two popular brands in the market: Milk Joy and Gatas ng Kalabaw. Other plant redesign projects were initiated by government and covered with lease agreements with cooperative federations. The capability and confidence established in designing appropriate capacities of processing plants have greatly reduced the investment required for plant installation.

Technical support for milk quality assurance. For many years, local industry relied on academe-based technical support. This meant following prescriptions of the Dairy Training and Research Institute on all aspects of dairying from farm to plant. While such support was scientifically sound it was not always grounded on commercial realities. For example, some

⁸ *A water retort facility passes hot water instead of steam preventing the scorching of milk and greatly minimizing the cooked taste. As designed by the Philippines' science and technology department, patterned after some versions made in other countries, it processes sterilized milk in stand-up aluminum pouches. The product has a shelf life of six months or more. It allows dairy processors to produce milk that can be delivered to remote areas in cardboard boxes stored in ambient temperature. The product has the shelf life of UHT milk in tetrapaks, has the delightful taste of flavored milk. The equipment is suitable for processing smaller volumes (1,000 liters) of milk in batches unlike UHT plants that require some 10,000 liters per run.*



products developed failed to succeed in penetrating commercial markets sometimes due to poor packaging, untested shelf life or omissions in product costing. The breakthrough for the local dairy industry came about sometime in 1997 when a group of technical people from Nestle and Magnolia (top food companies in the Philippines), upon their retirement, organized a technical cooperative that made their services available to other coops, dairy coops included. The technical cooperative established a commercial laboratory where milk samples were sent for microbiological tests, milk composition analysis, commercial sterility and shelf life tests. The experience with an independent group doing the tests has greatly motivated producers and processors to upgrade quality and to strive for consistency in milk quality. With help from the group, other technicians were also trained and deployed as plant quality control staff in different processing plants.

Enterprise orientation and market-oriented financing packages. Transforming dairy farmers to dairy entrepreneurs was a theme and pre-occupation of the movers of the industry both in government and the private sector. The transformation process includes training farmers in business skills as well as value-adding in terms of standardized quality testing at the collection centers and the processing plants, assisting in obtaining product licenses and plant accreditation, enforcing product standards for suppliers in milk feeding programs. There had to be a break from the tradition of relying on government subsidies and freebies. Cooperatives had to operate on their own capital and had to pay for facilities established by government. Farmers had to learn that milk price is determined on both sides of the plant: the farm and the market. Even the farm operation had to be run like an enterprise. These points had to permeate all training programs and had to manifest in financing packages for the industry. One of the indicators of the effect of this orientation is when a farmer talks about the need to produce at least the breakeven volume on his three animals and the smile on the face when the day's milk exceeds that level. Financing packages had to be negotiated with the financing agencies to reflect the dairy production cycle. This entailed technicians certifying that an animal is in its dry period and farmer would resume loan payment upon calving of his animal. The financing agencies had to agree not to penalize non-payment during the dry period but expected balloon payments with the sale of male calves.

Island dairies for local milk supply. Even Manila-based bureaucrats could not believe that small islands could operate viable dairy enterprises. But when dairy zones were established on islands like Siquijor, Iloilo and Negros Occidental, and these enterprises managed to penetrate local markets, it began to make sense. Supplying the local urban markets requires appropriate packaging, quality assurance, distribution system, etc. Local teams were trained to handle these aspects. In the immediate communities of the dairy producers, milk also became affordable to farm workers and households. For example, in the island of Negros Occidental, sugar farm workers are able to buy farm-pasteurized milk at P20 per liter which is about one-third the price of milk at supermarket shelves. Although the processing plant campaigns for the delivery of the maximum volume of milk to the plant, an amount of community sales is tolerated.

Dairy zone and the clustering of big and small farms. In previous years, there were strong sentiments on whether to support big farms or small farms. The dairy zone model itself is a model that provides a structure for the participation of small farmers. Over time and as dairy coops and their counterpart big farms gained confidence in their own capacities, they started to do business with one another. Their transactions demonstrated that they could end up gaining bigger market shares by stabilizing supply – they could do this if those who had more milk made this available to those who did not have enough. In the end, it was good business to collaborate. In the area of credit sales, they also soon learned that their outlets that had unpaid accounts with one supplier sometimes merely shifted to another supplier and delay the payment to a previous supplier. Soon enough, the processors learned that it was not always because they were better than an outlet



dropped one supplier in their favour. In transacting with one other, processors learned who are the customers who were simply hopping from one supplier to another.

Commercial farm module. With small producers transitioning to medium- and bigger-size farms of 20 to 100 animals, the National Dairy Authority has started to design commercial farm modules that would suit this emerging crop of dairy farmers. Farm size is a very fluid figure but the stages observed in all zones usually start with farmers engaged in dairy on a part time basis, then one member of the family goes into it full time with about three other family members assisting in forage gathering, milking, milk delivery to the collection center and selling some of the milk to the immediate community.

NDA's latest count includes 77 private commercial enterprises that are not cooperatives and 38 government stock farms and institution engaged in dairy. Another indication of the trend towards private endeavors that are not structured as cooperatives is the creation, in Mindanao, of a Mindanao Dairy Alliance even as there are two dairy cooperative federations operating to accommodate these private enterprises. Some examples of private dairy farms are: the Del Monte dairy in Bukidnon, the farm of the Benedictine monks and farms run by non-government institutions and foundations.

The role of the NDA is critical in ensuring the participation of smallholder dairy farmers in the industry. This is done by supporting massive upgrading of local animals that eventually provide the cheapest source of dairy stocks. Interventions in quality assurance is also a significant role played by NDA's technical staff. Furthermore, in designing loan facilities and enterprise contracts, NDA plays the role of calibrating the levels of support. In some zones where land is limited, dairy farmers have had to give up stocks by selling or passing them on the relatives with farms in other areas. While that mode of natural dispersal is acceptable, a more structured and organized mode of expansion may also be encouraged systematically. It is along this rationale that bigger loan packages and other types of technical support are being designed to capacitate the growing dairy farms. Those support packages in process include tractors on loan, breeding farm support, pasture development loan and others. Financing agencies are also being tapped to open lending windows that will allow larger farms to procure more stocks or to invest in other facilities such as milking parlors and farm cooling equipment.

Philippine Carabao Center. The Philippines has a world-class research center for buffaloes. The studies being conducted at PCC and the research on genetic improvement are directed towards making the Philippine Carabao a major milk supplier of the country. Today, 36% of national milk production comes from carabaos, 63% from cattle and less than one percent from goats. The emphasis on carabaos is based on the consideration of the climatic suitability of the carabao and the huge number of animals on the ground that may potentially be upgraded to dairy buffalo breed. Aside from the research focus, PCC also supports buffalo-based dairy enterprises in various parts of the country. It maintains the province of Nueva Ecija as its impact zone and has 13 centers throughout the country connected with local state universities.

Dairy Training and Research Institute. DTRI continues to be a resource for the industry with its core staff of dairy specialists. Training courses for coop-based dairy technicians are conducted in coordination with DTRI. It also maintains a semen collection facility that supplies dairy farms in Luzon. The facilities of the institute, however, can be improved.

Official Development Assistance. With very limited resources channelled to the smallholder dairy sector, support through official development assistance significantly accelerated dairy zone expansion in the last six years. Specifically, official development assistance under the US



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Government's Section 416(b) facility and the Food for Progress program was a significant source of investment in smallholder dairy. In partnerships with the US Department of Agriculture, the National Dairy Authority and Land O'Lakes Inc. (LOL) of the US, local capacity building has been undertaken in four new dairy zones with four more in progress. Even a milk feeding program by LOL had a dairy capacity building component with small farmers in one region as participants. Today, that site is being upscaled into a dairy zone. Assistance from the FAO for improving milk quality and from the Japanese and Australian governments for improved milk quality and breeding provided valuable support to the smallholder dairy sector.

The success of the foreign-funded programs may be attributed, to a large extent, to the high degree of collaboration achieved between the foreign donor and the local partners on a sound program. It would be recalled that other foreign-assisted programs have been installed but did not succeed due, in part, to the lack of recognition of the role of smallholders in the success of dairying and the desire to go big and establish huge communal farms. The history of Philippine dairy industry is marked with failed government and private ventures in big farms going on their own. Somehow, a cluster of smallholders that fill the capacity of the core farm has improved the viability of the bigger farms. In turn smallholders benefit through dividends received as members of the coop federation or through higher milk procurement prices offered by private farms during dry periods.



Chapter 3. Smallholder Dairy Farmers

Focusing on smallholder dairy farmers, the following modes of inclusion are worth noting.

- 1. A strong dairy enterprise is the most important requisite for small farmer inclusion.** At the present stage of dairy development in the Philippines, the dairy enterprise has taken many forms. The most dominant is the cooperative of which there are two distinct categories: there are dairy coops with purely dairy farmers as members and there are existing multipurpose or credit coops that have opted to include dairy as one of its business enterprises. One would find both types existing within dairy zones although the first type is simpler in terms of management, the advantage of the second type is usually the use of its previous business experience in the dairy business. It has yet to be established which type ultimately allows broader inclusion of small farmers. The organization of dairy farm producers is usually the primary cooperative which operates the collection center. The primaries are members of a second-tier coop which is the federation. The dairy federation operates the milk processing plant and undertakes marketing operations. The federations in the Philippines are members of the Dairy Confederation of the Philippines, the national organization of dairy cooperatives. The Dairy Confederation is independent of the National Dairy Authority. It is the apex organization of the various dairy federations.

Other forms of dairy enterprise are single proprietorships which some farmers who begin to grow faster than others have opted for. These are usually farmers who have a little more capital to be able to procure stocks rather than just wait for the natural calving of their initial herd. They also own or have access to bigger parcels of land for pasture. Annex 7 shows that in the most developed zone in Laguna-Quezon, there is an equal number of cooperatives and non-coop enterprise.

There are also public-private partnerships in dairy enterprises. This has emerged in some instances when the federation is unable to manage a viable business enterprise. Often, this was due to the common weaknesses of cooperatives such as the abuse by some members in the management staff, delay in payments to farmers, inability of the plant to impose quality standards. In earlier years, this mode was resorted to by the National Dairy Authority in the form of a management contract with the federation. Under the management contract arrangement, the NDA took over operations until problems are straightened out and then the NDA exited. More recently, the public-private equity partnership has been formalized. Under this arrangement, the NDA takes an equity in the business which then becomes open to equity participation by the federation or other private entities.

- 2. Collaboration among big and small enterprises, once they have achieved some level of stability, is important for stronger market presence.** Big and small dairy enterprises operating side by side is a phenomenon of recent years. It emerged as a natural recourse for enterprises to take advantage of market opportunities and to address some common problems. Its most dominant form is the collaboration between a processing facility that owns a farm and produces its base milk requirement but also maintains several small groups that supply milk to the plant. This type of collaboration has resulted in dairy producers shifting from one processing facility to another especially



around the Metro Manila area. In general, there exists a healthy competition on the best benefits given to the small producers. The coop-run facility, for example pays regular dividends to members which non-coop enterprises do not. On the other hand, the non-coops usually attract producers by offering higher procurement prices for raw milk. The competition leads to a market-determined price for the milk which ultimately benefits small producers. Of course, there are also instances when the big processors drop small suppliers. In the latter case, the coop members have a better guarantee from their federation that their produce will be procured.

- 3. The money realized from dairying is the single biggest incentive for smallholder dairy producers.** As soon as a smallholder begins to make money from dairying activity, he or she is most likely to stay on. In dairy zones where small and big farmers operate, the big farmers who have other options and who can afford other investments are the first to quit while the smallholders continue. This reality justifies focusing interventions in smallholder dairy programs on enterprise strengthening to ensure the broadest inclusion of smallholders.
- 4. Technical assistance along the entire value chain is critical.** Production support is important but not enough. Enterprises with broad smallholder participation have succeeded where the technical assistance extends beyond the farms to include quality control, product development, packaging, market positioning and enterprise management. Making these forms of assistance accessible and affordable is a challenge to any support mechanism for smallholders.
- 5. Dairy Foundation supported smallholder inclusion.** A strategy of inclusion of smallholders requires a deliberate and creative development vehicle that would be sensitive to the impact of policies, programs and activities to smallholders. The smallholders being the most vulnerable, the foundation provided assistance when government support faltered an outstanding example was the point when government set aside the dairy zone model and went for communal farms. The Dairy Foundation⁹ explicitly supported the dairy zone model that emphasized the inclusion of smallholders in dairy development. Established in 1992, the foundation assisted in the organization of the national organization of smallholder dairy farmers, the Dairy Confederation of the Philippines. It was only in 2000 that big enterprises were admitted for membership in the Dairy Confederation after it has been demonstrated that those admitted recognized the important role of smallholders. At the present stage where the robust collaboration of big and small dairy entrepreneurs is deemed important, the Dairy Foundation is facilitating the process by helping configure collaborative endeavours such as public-private partnerships in breeding programs, market matching, etc.
- 6. Milk feeding programs as pump primer.** Managing the product mix so that dairy enterprises do not lose commercial markets when there is a surge of sponsored milk

⁹ *The Dairy Development Foundation of the Philippines, Inc. is a non-government organization established purposely to fill the gaps and temper the swings in government support for smallholder dairy farmers. It had a Board of Trustees composed of respected members of society (including a former agriculture secretary, former ambassador and vice president of the Philippines, a bishop, former senator, former congressman and others). Sally Bulatao, who eventually assumed the post of Administrator of the NDA, is a co-founder of the DDFPI. Funding was sourced from international agencies. Since early 2007, the DDFPI has stopped operations due to lack of funds. Some former members of the foundation continue to assist in dairy development in their private capacities.*



feeding programs is a critical role. At the National Dairy Authority, there was an attempt to keep the ratio of milk that goes to milk feeding to no more than 40%. But as public programs go, there are times when the demand outpaces the planned allotment for school feeding. It has been observed that the plants with the most stable commercial markets keep their commitments to school feeding at the minimum. In areas outside the major city centers, dairy enterprises in the startup stage are usually primed up with school feeding. This coincides with the desire of local government units that the local nutrition programs be supplied by local farmers.

- 7. Indigenous products provide the highest returns.** There are areas in the Philippines that have a tradition of producing buffalo milk and processing this to indigenous milk-based products such as milk candies and local cheeses. Different regions are known for particular types of pastillas and the recipe for keso in one region is said to have been handed down from ancestors of 400 years ago. When small dairy farmers engage in indigenous product processing, they realize the highest returns based simply on the principle of realizing the gains from value adding. There are prospects of expanding their markets which have not been maximized. For example, keso is ordered even by Filipinos residing abroad but one cannot find it in Metro Manila.



Chapter 4. Conclusions

| Strengths | how to build on them |
|--|---|
| <p>Fairly strong base of private commercial players supplying a huge urban market.</p> <p>Island-based processing facilities that can produce high quality fresh milk-based products.</p> <p>A range of commercially accepted fresh-milk based products.</p> | <p>Continue mainstreaming more products and ensure consistent supply and product quality.</p> <p>Stabilize local retail markets which are more stable than institutional markets that could easily shift suppliers.</p> <p>Continue working on competitively priced products especially popular items such as condensed milk.</p> |
| Weaknesses | how to correct them |
| <p>Huge deficit of dairy animal stocks.</p> <p>Insufficient infrastructure support for expanding breeding capacities.</p> <p>Generally inconsistent application of milk quality standards across production and processing units.</p> <p>Limited financing packages tailored to the dairy value chain and dairy business cycle.</p> <p>Prospective institutional users of local milk are not equipped to shift from powder to liquid milk.</p> | <p>Initiate public-private partnerships in dairy animal breeding.</p> <p>Establish an independent milk quality assurance system using private laboratories.</p> <p>Design appropriate financing packages with features, particularly repayment schemes, tailored to dairy value chain and productive cycle.</p> <p>Product development support may include some financing for retooling and test runs for new applications.</p> |
| Opportunities | how to pursue them |
| <p>Broadening recognition of the benefits of dairying to rural progress and poverty alleviation</p> <p>Overseas contract workers looking out for investment opportunities.</p> <p>Public-private partnership in dairy animal breeding and procurement.</p> <p>Improving trade environment that eliminates some subsidies in dairy producing countries</p> | <p>Document how dairy enterprises strengthen rural economies through case studies and quantitative impact assessment. Unfortunately, there is a dearth of studies in this aspect of the industry.</p> <p>Design more investment windows that provide easy entry and easy exit.</p> <p>Conduct micro studies to analyze competitiveness (ex. Determining the actual conversion of skim milk powder to its liquid milk equivalent in a specific product application.).</p> <p>Support for these has yet to be identified.</p> |
| Threats | how to avert them |
| <p>Continuing inflow of cheap fresh milk substitutes.</p> <p>Unfair labeling of milk products.</p> | <p>Improve capacity for regulation of dairy product substitutes.</p> <p>Stop unfair labeling of milk products (ex. Labeling whey as whey milk and labeling UHT-processed milk as fresh milk.)</p> |



Chapter 5: Dairy Strategy Prospects

Important strategic lessons for the local dairy sector to competitively supply growing markets in the future:

Invest in quality assurance and product development. This involves investments in facilities, in personnel and in process documentation – all important factors in achieving consistent milk product quality. While these are taken for granted for bigger companies, smallholder-operated enterprises may not have sufficient capital to invest. These areas may be considered as preferred points of intervention for smallholder operations. Fortunately, the dividing line between appropriate development/public support and private sector investment in this field is fairly clear. Enterprises are usually able and ready to hire their in-house quality control person. They would also have their basic testing equipment and a simple laboratory. The setting of product quality standards is certainly the domain of government or development assistance. The sharing of costs in product development is usually tricky. Without some public support, only the bigger processors could pursue all the stages of product development from production of samples, through all the testing regimen, product registration, appropriate packaging, filling equipment, etc. For smallholders to have significant benefits from advancing along the value chain, support in these aspects would be appropriate. Assistance in the manualization of product procedures has been tried with some local funding sources and has worked occasionally (the manual for gouda cheese production is one example.)

Target processing efficiencies by localizing supply and firming up product mix. With the high cost of transportation and maintaining a cold chain, the approach to supply local demand with local production has significant cost advantages. Stabilizing enterprise operations includes managing a product mix that suits a local market and achieves maximum cost efficiencies.

Maximize the parallel and collaborative operation of big and small farms. Where mutual interest is sufficiently safeguarded, more collaborative transactions could be encouraged. In the Philippines, smallholder producers who are growing faster than others sometimes opt to partner with a big processor in the area. In one case, a big farm in Mindanao serves as supply integrator and provides milk in bulk to a processor.

Invest in breeding and herd improvement. Accelerated expansion can only take place if the supply of stocks is assured. In the Philippines, investment in animal procurement and breeding requires infrastructure support including reliable supply of liquid nitrogen to all livestock areas. Configuring public-private partnerships for breeding farms has yet to be fully developed. Because of the emphasis on carabao, the Philippine Carabao Center is more advanced in the field of breeding. Nonetheless, upgrading of local cattle is also promoted. Government still provides semen for free, conducts training of artificial insemination technicians and has bull loan programs for some areas. More recently, the NDA has gone into a public-private arrangement to operate a cattle breeding farm owned by the NDA but managed by a successful dairy farmer who started small but has grown to a farm with 75 milking cows. The Dairy Confederation of the Philippines is also studying the possibility of engaging in breeding-related ventures. The designing of more public-private ventures with the participation of groups that understand the dynamics of smallholder dairy will be helpful in ensuring the inclusion of smallholders in these arrangements.

Design suitable financing schemes for dairy animal procurement. “Palit-baka” or repayment in kind has always been the preferred mode of animal procurement for smallholders. It is considered least burdensome and takes away the anxiety over committing to pay regular



financial obligations from a live animals whose performance cannot be predicted accurately. However, the scheme has a low potential for attracting commercial financing because the step of monetizing collection in kind involves other costs. The National Dairy Authority has evolved various financing schemes to make lending for animal procurement more affordable through a cycle that corresponds to the productivity of the dairy animal. The packages have provided incentives for early repayment through the sale of bull calves and has implemented sanctions such as the pullout of animals from negligent farmers. Tapping more suitable financing agencies prepared to administer dairy-oriented loan packages is still in progress.

The prospects for beneficial smallholder dairy farmer participation in dairy markets.

Three prospects are on the horizon for more smallholder dairy farmers benefiting from expanding local dairy markets:

Dairy for agrarian reform communities and families of overseas contract workers. A number of existing dairy zones are located in agrarian reform communities including those in Bulacan, Quezon, Negros Occidental, Iloilo, Zamboanga del Norte and other provinces. Authorities have seen the benefits of dairy on families of agrarian reform beneficiaries. As a result, the Department of Agrarian Reform is currently considering dairy as an engagement that may be introduced in suitable areas among the 1,500 agrarian reform communities throughout the country. This initiative could potentially accelerate the participation of more smallholders. Likewise, overseas contract workers looking for investment opportunities have considered dairy as an option for their families in their home villages. Contract workers whose families live along present milk collection routes have been among the early takers due to easy of entry. A dairy enterprise also offers a scheme where a contract worker invests in dairy animals. The company offers to take care of the animals and buy all the milk produced by the animal. The boarding fee of the animal is deducted from milk proceeds while the investor's share is deposited in his bank account. The investor receives a regular report on the milk produced by the animal and an occasional photo of the farmer caretaker and the boarder dairy animal. Both prospects require sound implementing plans and effective monitoring to deter unscrupulous parties from taking advantage of new players.

Mainstreaming of widely consumed dairy products like evaporated and condensed milk and other products. With the present facilities available, dairy enterprises are already capable of producing popular dairy products such as evaporated and condensed milk. Some support could be used for product development for more competitive pricing. This will be done even as introduction of other products continue particularly yogurts and cheeses. The growing interest in consuming local products always includes dairy products which seem to symbolize modern agriculture in some rural areas.

Institutionalized Local Government Unit-sponsored milk feeding for daycare centers and schools. Smallholder dairy producers in the Philippines do not enjoy the advantage of being secure that all milk produced will be procured by a central milk buying station backed by a nationally legislated milk procurement fund. Instead, there are occasional national agency- or LGU-sponsored milk feeding programs that have yet to be institutionalized so that the program can be more predictable and less subject to policy swings. One recent example was when the government prescribed the use of rice distribution as a school feeding program in place of milk. In a few municipalities and provinces, the school milk program has been embodied in local ordinance which makes the program more permanent. In most areas, however, farmers and their coops have to make representations every school year to continue to supply milk for the program. When big companies donate milk powder to local governments or offer rock bottom prices, the local suppliers are sometimes dropped. Although the law, the National Dairy Development Act



(Republic Act 7884), provides that government sponsored nutrition programs shall be supplied by local producers, its strict implementation is still to be strictly observed.

Focussed, actionable, national and regional dairy strategies:

Propose livestock and dairy as a major poverty reduction strategy and prepare the necessary supporting documentation. While livestock and dairy as pro-poor strategies are found in existing FAO programs, there is room to more effectively capture the imagination and support of policy makers and development practitioners. Specifically for the Philippines, the good socio-economic impact of livestock and dairy programs in other countries can serve as stimulus for a more systematic promotion of smallholder livestock and dairy programs. For decision makers, more comprehensive research and documentation would be required particularly those that undertake comparative impact studies among various poverty reduction options. Some examples may be: comparing pure crop and crop-livestock programs or the distributive impact of smallholder farmers supplying nutrition programs.

Transform the lessons learned studies into program templates for industry operating areas such as: models for installing dairy capacity, dairy financing packages, breeding farm modules, milk quality-based pricing systems, dairy plant management fundamentals, etc. Make these available to regional industry players and assist in adapting the templates to local settings including grassroots level exchanges among successful smallholder dairy producers and enterprise managers. There may be a program to identify one or two successful smallholder-based dairy enterprises in each country and conduct on-site training for two or three country participants covering various aspects of enterprise operations that allows for maximum discussion of comparative methods or approaches to various aspects of operation. The course can be configured so that every training day starts with actual observation of the process to be studied: quality control at farm and plant to include milk tests, temperature control and clean in place procedures or milk allocation to various products or deliveries for school milk feeding. Such a program could stimulate greater systematization among participating processing plants and farms.

Conclusion

Smallholder dairy farmers' enterprises, participating in the Philippines' local dairy sector have hurdled the test of enterprise viability. Annex 6 shows the financial growth of five major enterprises over the years. Annexes 7 and 8 indicate the performance of other enterprises and the profile of the zones. While profit levels are modest, the sustained operations of these enterprises ensures that producers' milk are collected and paid for. Operating on their own resources, paying rent for facilities to government, paying farmers regularly for raw milk are the minimum indicators of enterprise viability.

It was not an easy task considering that the dominant thinking in government and business has been the fact that smallholder dairying cannot work. In fact, up to this time, the thinking still remains with some players. However, there are enough successful enterprises being run by individual smallholder dairy farmers, primary coops and coop federations to prove that the broad-based model of clustered producers can take advantage of distinct economies of scale using underutilized farm labor and marginal lands. The cost efficiencies will continue to be a subject of closer scrutiny but the staying power shown by smallholder dairy producers and their enterprises is traced to the single most powerful incentive: profitability. Many more have not crossed the finish line but those who have achieved sustainability serve as models of what is possible.



The Philippines: Enterprise-driven dairy development

An interesting window of opportunity is the clustering of big and small farm enterprises. In particular, some of the bigger ones are farms that started small and have achieved a bigger scale of operation over time. These collaborative ventures of small and bigger dairy entrepreneurs as well as public-private ventures are accelerating and opening new opportunities for all players.

The entry of non-government organizations and foundations is also interesting as they could provide the greater attention to social preparation of smallholders which is often overlooked when government-initiated projects tend to focus on the technical aspects.

Overall, smallholder dairy enterprises in the Philippines are small but they run on their own resources and are realizing comparatively satisfactory returns. There will always be attempts to “fast-track” and downplay the role of smallholders but the history of dairying in the Philippines has shown enough lessons to validate their significance for the local dairy industry.



Annex 1

Some definitions

Small dairy farmer -- someone with one to three dairy animals, often, not belonging to an organized milk collection system.

Smallholder milk producer someone who may start with one to three dairy animals but with a perspective of growing the herd to 5 to 20 head. This producer belongs to a village association or primary producers' cooperative that undertakes the pooling of milk through a collection system. In the field, the distinction between small dairy farmer and smallholder milk producer is negligible.

Formal markets refer to the dairy federation that operates the processing facility in a dairy zone that usually buys the milk from the primary coops. It also refers to commercial dairy farms that own a farm and processing facility but also buys raw milk from other milk producers. The formal market includes the final consumers of the milk products including the institutional buyers (supermarkets, hotels, restaurants, coffee shops) and the final consumers.

Informal markets refer to milk sellers and buyers in a neighborhood or village. It includes small dairy farmers and smallholder milk producers who sell some of the farm produce to the local market.

Dairy value chain refers to the various stages through which milk and milk products pass from farm to the final consumer.

Dairy zone. A dairy zone consists of 100 farmers with 300 dairy animals located in adjacent villages served by a processing plant located within a 30-kilometer radius of an urban center capable of absorbing at least 300 to 500 liters of milk per day.



Annex 2

Recommended Reference Materials

National Dairy Authority Annual Reports 2000 to 2005.

Faces of Modern Agriculture in Dairy, National Dairy Authority, 2004.

Philippine Dairy Zones, National Dairy Authority, 2007.

Sosimo Ma. Pablico, **Changing Lives Beyond the Draft Carabao**, Philippine Carabao Center, 2006.

Ray Goldberg and Kerry Herman, **Nestle's Milk District Model: Economic Development for a Value-Added Food Chain and Improved Nutrition**, Harvard Business School Case Study, Topics in global health and development, Volume 1, Edition 1, January 2006.

Dairy Training and Research Institute Annual Reports, 2000 to 2006.

Survey of the Smallholder Dairy Sector, Philippines Bureau of Agricultural Statistics, 2003.

Medium-Term Dairy Development Plan 1989-92 and the Dairy Industry Development Model, Department of Agriculture.

The Philippines Dairy Road Map, 2004-2010, National Dairy Authority.

Dairy in Agriculture 2020, National Dairy Authority, 2005.

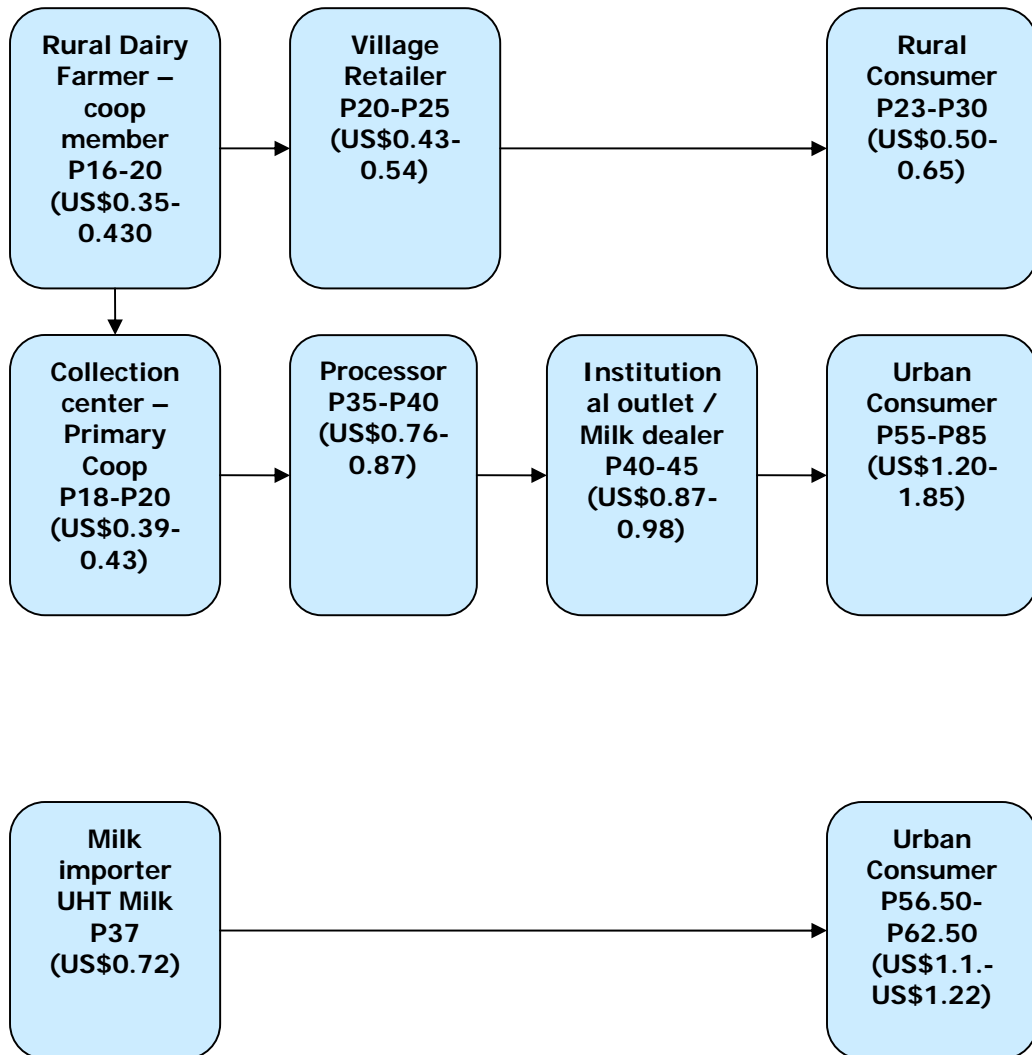
Changing Landscapes and Lifestyles, National Dairy Authority, Power Point Presentation on the Philippines Dairy Industry, 2006.

Dong their Dairy Best in Davao, Dairy Development Foundation of the Philippines, Inc., 1994.

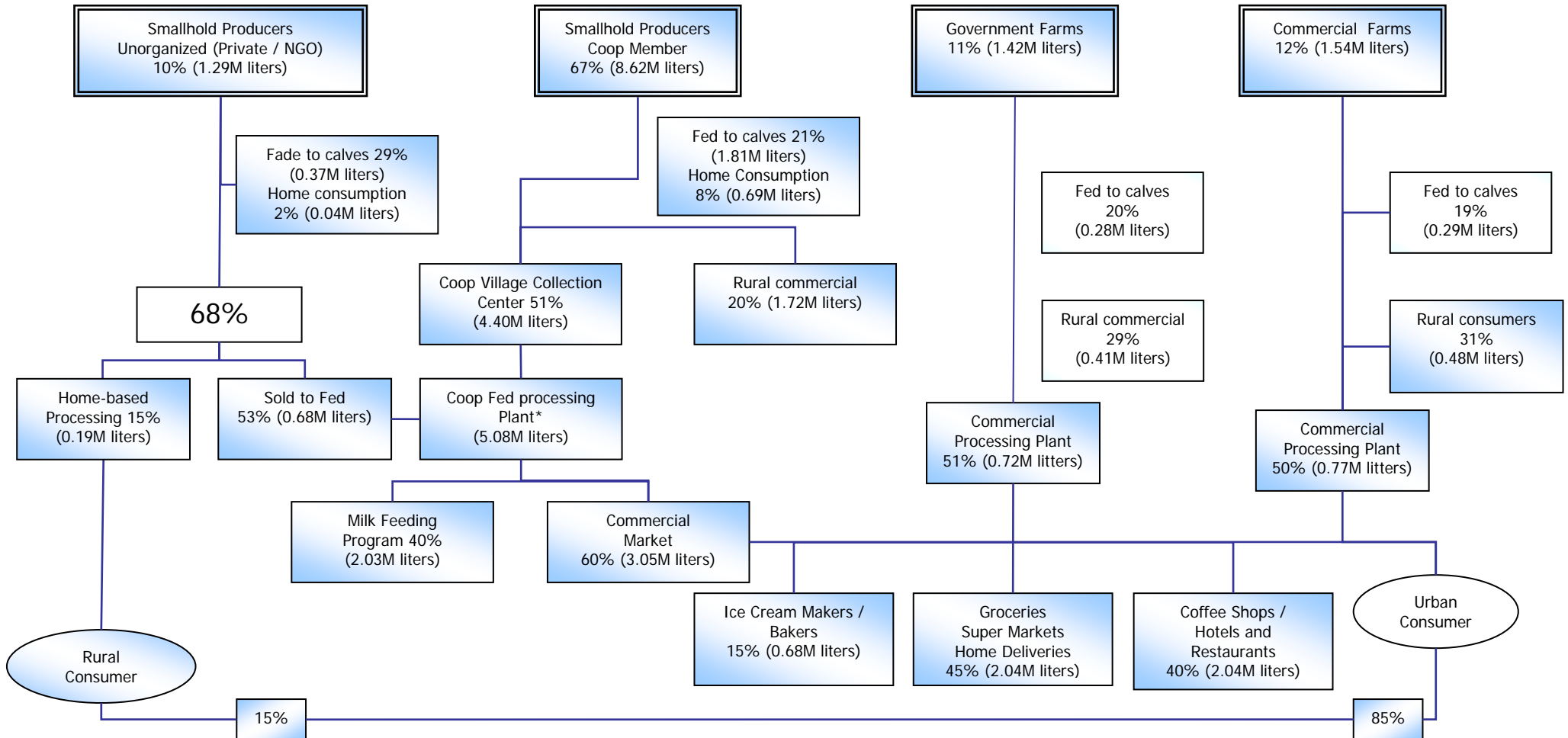
Dairy for Beginners –There is Money in Milk, Dairy Development Foundation of the Philippines, Inc. 2004.

Annex 3

Milk Price Chart (in Ph pesos per liter)



Milk Flow Chat (12.87m Liters)



Note : *Total volume 5.08M liters sold to Fed are from Private farm 53% or 0.68M liters and Coop –CVCC 51% or 4.40M liters
The percentages in the given indicators are based on the NDA-assisted / monitored projects (indicative) but the total production of 12.87M liters is based on National figures.

Description Of A Philippine Dairy Development Model

A dairy development model that concretizes the vision presented in the Medium-Term Dairy Development Plan (1989-93) shall consist of three main parts: a broad foundation, a basic structure or module and an infrastructure support.

Foundation: Massive Backyard Dairying

1. This component proceeds from a basic resource which is the inventory of animals as of 1988: 2.788 million carabaos, 1.634 million cattle and 2.046 million goats. Laying the foundation for an indigenous, smallholder-based dairy industry requires the milking of all milkable animals on the ground.
2. Animal infusion at this level is very minimal and will be left, primarily, to local initiatives which may include projects of NGOs, of DA local offices, of PCA in coconut areas, of DAR in agrarian reform areas, etc.
3. The proposed National Milk Campaign shall include the promotion of this component.
4. A structural support could be established through the creation of community livestock management units in barangays with experience in organized activities. Such a unit could handle inventory taking, planning of breeding schemes; forage improvement, complementary dairying and fattening schemes, etc.
5. DA's national network of technicians shall be the main promotion agents for this campaign. This will entail matching the suitable dairy areas with the dairy trained technicians.
6. Dairy farmers' training will be a major activity at this level to include the training of paravets, community dairy officers, training in indigenous feed sourcing, home-based or community-based dairy processing and others.
7. This stage shall be primarily focused at improving rural nutrition. Any marketing activity at this level will be limited to the producers' communities.
8. From this level may emerge prospective dairy zones.

Basic structure: Network of Dairy Modules

1. The dairy module shall have basically four components: a dairy market base, a production unit, a collection system and a processing facility.
2. Dairy market base. The dairy module, from inception, shall be market oriented. As such the following elements shall be present at the prospective module site:
 - a city center and 5 to 6 contiguous municipalities as target market
 - with an assured market for a daily base volume of 300 liters and the capability to develop a dealer network to absorb 500 to 700 liters and to supply 200 liters to a dairy facility outside the module
 - a market for 700 liters daily translates to about 2,800 households in the prospective site with at least 4 house-hold members consuming a glass of milk (250 ml) each about twice a week
 - this market shall be located within a 35-kilometer radius of the processing facility
 - one insulated delivery vehicle and a telephone are basic requirements of the marketing unit
3. Production Unit. The dairy module's production unit shall consist of:
 - a herd of 300 dairy animals



- held by 100 dairy farmers
- with at least 2 pregnant animals in each three-cow herd
- located in 4 clusters of 25 members and 75 animals each
- each cluster located within two adjacent barangays
- each cluster accessible to 4-wheeled vehicle
- each dairy farmer should be able to supply at least 100 kilos of grass per day which requires his access to an aggregate area of 3,000 square meters of grass land each month for cut-and carry feeding
- each farmer should have access to adequate supply of water to provide at least 111 liters of water each day for 3 animals

The technical support for the dairy module shall include:

- breeding services: free semen, AI equipment and AI services for five years
- animal health services: free veterinary and paraveterinary services; free hemosept and FMD vaccines; available drugs for emergency to be sold to farmer at cost; technical assistance on preparation of silage

The dairy module requires the infusion of dairy animals to the unit. However, the dispersal scheme and credit design have yet to be drawn. Some concepts suggested so far are:

- Animal loan fund deposited by government with the bank; farmer borrows from the bank; bank undertakes all evaluation of farmer qualification; bank undertakes collection
 - Cooperative undertakes the preparation of production module including readiness of farmer participants; coop borrows from bank; individual farmer loans administered by coop; bank collects from coop; coop collects from farmers through deductions from milk sales. (This concept is highly recommended by the dairy committee.)
 - Cooperative production unit is required to have counterpart animals to qualify - - say 100 head (this may be put together from animals on the ground, from small grants, from local projects, etc). Dairy Authority provides equal number of dairy animals; farmers repay with one female yearling which is dispersed to new dairy farmers. This scheme involves no loan fund and no loan amortization.
4. Collection System. The smallholder-based production unit requires a systematic collection system which should have the following elements:
- milk tanks identified with every farmer or group of farmers who supply the raw milk
 - collection station designed for each cluster
 - testing capability at the collection station preferably by cooperative's quality control officer
 - collection vehicle/s controlled by the cooperative (vehicles may have to be leased from government initially)
5. Processing Facility. The processing plant is the center of the module. This will consist of a pasteurizer and homogenizer with a capacity of 200 liters per hour or less (this is the smallest capacity available at present). Plant will also have to be leased from government by the cooperative. In addition, assistance in plant operations and product quality control will be needed by the coops. This assistance may be provided by government for not more than two years for each dairy unit.

Infrastructure: Support Network

Establishment of a cooperative-based industry in dairy requires a support network that corresponds to the structure of the modules. This will include the following:

- A National Dairy Authority which will uphold the industry rationale at all phases of development support
- Production support will consist of the maintenance of Breeding Center and Stock Farm to handle animal movement and breed upgrading



- Processing support will consist of providing a second-level processing of surplus milk either by setting up facilities for cheesemaking, UHT processing or spray drying that could eventually be run by more advanced coops or by requiring commercial processors to absorb the excess milk production. This includes product development which the dairy modules cannot realistically be expected to undertake.
- Further integration would include support for fabrication of cheese pressers, filling machines, churners, and other processing equipment and for the development of improved but affordable packaging materials.
- Market support shall include the identification of markets to absorb the base volume of 300 liters per dairy unit per day and the brokering for institutional markets for the dairy units.
- Dairy training and research should be anchored on the needs of dairy units particularly in herd and breed improvement, indigenous feed sourcing, animal care, quality control, product improvement, and others. Training should include direct farmer education. Even training in other countries should consider farmer-technician trainees rather than government technicians only.

Annex 6

Historical Financial Indicators Of Major Dairy Cooperative Federations 1995 – 2006 (In Thousand Pesos)

FINANCIAL DATA

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---------------------------|------------------|------------------|------------------|------------------|------------------|-------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Net Sales | 28,542.91 | 28,749.38 | 27,184.00 | 27,634.00 | 23,879.00 | 25,274.31 | 33,804.74 | 41,623.40 | 56,918.34 | 71,468.42 | 94,363.04 | 83,739.50 |
| <i>FEDDAFCI</i> | 11,790.31 | 10,595.73 | 9,453.00 | 9,183.00 | 7,158.00 | 7,871.35 | 9,362.03 | 10,650.79 | 11,371.37 | 13,954.58 | 12,129.10 | 12,783.40 |
| <i>KKMI</i> | 3,982.34 | 3,835.07 | 4,225.00 | 4,850.00 | 4,954.00 | 5,779.76 | 8,103.39 | 10,316.75 | 14,549.42 | 18,438.03 | 22,264.54 | 23,620.84 |
| <i>CEFEDCO</i> | 8,198.34 | 9,322.83 | 7,504.00 | 6,729.00 | 6,302.00 | 5,848.10 | 7,699.31 | 7,046.66 | 10,181.15 | 15,699.69 | 17,314.53 | 19,579.30 |
| <i>NMFDC</i> | 4,571.92 | 4,995.75 | 6,002.00 | 6,872.00 | 5,465.00 | 5,775.10 | 8,640.01 | 6,423.05 | 10,043.47 | 15,627.65 | 31,254.75 | 17,864.74 |
| <i>Sta. Maria</i> | - | - | - | - | - | - | - | 7,186.15 | 10,772.93 | 7,748.47 | 11,400.12 | 9,891.22 |
| Cost of Sales | 19,647.26 | 20,120.11 | 18,074.00 | 18,592.00 | 17,316.00 | 18,455.98 | 23,610.93 | 29,379.87 | 39,502.39 | 48,291.87 | 66,479.76 | 59,709.16 |
| <i>FEDDAFCI</i> | 7,599.58 | 7,078.01 | 6,509.00 | 6,537.00 | 5,585.00 | 7,056.69 | 6,379.45 | 7,370.41 | 9,075.91 | 10,765.28 | 10,790.99 | 10,276.92 |
| <i>KKMI</i> | 2,638.10 | 2,430.70 | 2,544.00 | 2,727.00 | 3,036.00 | 3,268.29 | 5,204.51 | 4,983.15 | 8,832.32 | 11,455.91 | 13,651.15 | 14,552.10 |
| <i>CEFEDCO</i> | 5,627.10 | 6,413.48 | 4,803.00 | 4,185.00 | 4,602.00 | 4,040.16 | 5,782.22 | 6,701.51 | 6,018.11 | 9,308.56 | 11,132.56 | 14,274.72 |
| <i>NMFDC</i> | 3,782.48 | 4,197.92 | 4,218.00 | 5,143.00 | 4,093.00 | 4,090.85 | 6,244.75 | 4,522.60 | 6,840.92 | 10,622.75 | 21,949.02 | 13,754.56 |
| <i>Sta. Maria</i> | - | - | - | - | - | - | - | 5,802.20 | 8,735.13 | 6,139.38 | 8,956.05 | 6,850.87 |
| Operating Expenses | 6,709.22 | 7,409.32 | 7,680.00 | 7,793.00 | 7,619.00 | 8,693.83 | 8,510.02 | 9,790.78 | 12,805.20 | 16,556.29 | 21,525.57 | 19,298.88 |
| <i>FEDDAFCI</i> | 3,231.47 | 3,125.28 | 2,709.00 | 2,444.00 | 2,523.00 | 3,197.69 | 2,310.20 | 2,774.63 | 2,978.17 | 3,643.15 | 6,130.92 | 2,764.19 |
| <i>KKMI</i> | 879.37 | 1,061.82 | 1,336.00 | 1,476.00 | 1,460.00 | 1,828.67 | 1,936.70 | 2,184.74 | 3,302.72 | 4,885.29 | 5,811.04 | 6,591.26 |
| <i>CEFEDCO</i> | 1,813.21 | 1,997.26 | 2,134.00 | 2,173.00 | 2,209.00 | 2,311.95 | 2,422.62 | 2,102.44 | 2,918.98 | 4,050.80 | 5,303.64 | 5,755.92 |
| <i>NMFDC</i> | 785.17 | 1,224.96 | 1,501.00 | 1,700.00 | 1,427.00 | 1,355.52 | 1,840.50 | 1,330.19 | 2,217.27 | 2,454.30 | 2,283.01 | 1,564.49 |
| <i>Sta. Maria</i> | - | - | - | - | - | - | - | 1,398.78 | 1,388.06 | 1,522.75 | 1,996.95 | 2,623.02 |
| Net Income | 1,248.89 | 1,303.56 | 1,356.00 | 1,088.29 | (662.00) | (1,367.39) | 1,542.94 | 2,719.04 | 5,852.76 | 9,002.57 | 7,206.59 | 4,996.16 |
| <i>FEDDAFCI</i> | 8.04 | 439.08 | 274.00 | 282.77 | (822.00) | (2,315.71) | 644.30 | 555.26 | 669.33 | 1,136.81 | (3,041.47) | 811.59 |
| <i>KKMI</i> | 455.60 | 332.61 | 361.00 | 529.28 | 426.00 | 563.69 | 844.48 | 1,535.58 | 2,264.96 | 2,614.29 | 3,126.44 | 2,676.37 |
| <i>CEFEDCO</i> | 777.86 | 912.19 | 577.00 | 425.54 | (362.00) | 139.01 | (465.70) | 16.32 | 1,255.62 | 2,375.18 | 1,115.34 | -295.39 |
| <i>NMFDC</i> | 7.39 | (380.32) | 144.00 | (149.30) | 96.00 | 245.62 | 519.86 | 570.66 | 985.75 | 2,563.87 | 5,515.19 | 1,343.93 |
| <i>Sta. Maria</i> | - | - | - | - | - | - | - | 41.22 | 677.10 | 312.42 | 491.10 | 459.66 |

FEDDAFCI - Federation of Davao Dairy Cooperatives, Inc.

KKMI - Katipunan ng Kooperatibang Maggagatas, Ink.

CEFEDCO - Cebu Federation of Dairy Cooperatives

NMFDC - Northern Mindanao Federation of Dairy Cooperatives

Sta. Maria - Sta. Maria (Bulacan) Dairy Cooperative



Annex 7

Profile of Philippine Dairy Zone

| Dairy Zones | Dairy animals | Milk production (in 000 liters) | | Annual sales (in P000) | | Dairy farmers | Primary coops | Govt & private farms | Children in feeding programs |
|-----------------|---------------|---------------------------------|----------|------------------------|-----------|---------------|---------------|----------------------|------------------------------|
| | | 2005 | 2006 | 2005 | 2006 | | | | |
| Bulacan | 1,379 | 62.53 | 1,080.78 | 11,400.12 | 9,891.22 | 1,520 | 8 | 1 | 955 |
| Nueva Ecija | 498 | 400.09 | 667.08 | - | - | 45 | 3 | - | - |
| Zambales | 274 | 49.08 | 67.76 | - | - | 98 | 4 | - | - |
| Batangas | 726 | 794.97 | 870.50 | - | - | 318 | 5 | 4 | 584 |
| Laguna - Quezon | 1,926 | 1,340.12 | 1,440.37 | 22,264.54 | 23,620.84 | 1,359 | 10 | 9 | 880 |
| Albay | 115 | 51.58 | 43.20 | - | - | 162 | 2 | 2 | 550 |
| Camarines Sur | 220 | 33.45 | 57.10 | - | - | 41 | 2 | 1 | - |
| Sorsogon | 75 | 42.21 | 19.18 | - | - | 41 | 1 | 1 | 250 |
| Iloilo | 696 | 149.49 | 190.41 | 3,460.00 | 3,715.12 | 310 | 10 | 2 | 2,762 |
| Negros Occ. | 883 | 443.82 | 388.02 | - | 7,602.99 | 3,191 | 21 | 6 | 3,433 |
| Cebu | 1,036 | 671.36 | 567.50 | 17,314.53 | 19,579.30 | 1,827 | 24 | 2 | 2,468 |
| Zamboanga Norte | 483 | 150.21 | 200.95 | 1,010.00 | 3,675.97 | 130 | 2 | 3 | 604 |
| Mis Or/Bukidnon | 3,412 | 1,099.46 | 1,197.10 | 31,254.75 | 17,864.74 | 854 | 14 | 14 | - |
| Lanao Del Norte | 1,863 | 220.31 | 475.36 | - | - | 23 | 1 | 2 | 1,045 |
| Davao Del Sur | 1,477 | 770.40 | 750.05 | 12,129.10 | 12,783.40 | 292 | 13 | 2 | - |



Annex 8

Business Performance of Federations As of December 2006

| PARTICULARS | STA MARIA | KKMI | CEFEDCO | OLDAPRIMCO | IFEDCO | NEFEDCO | FEDDAFCI | NMFDC | ROXAS | TOTAL |
|-------------------------------|-------------|-------------|---------------|-------------|---------------|-------------|-------------|-------------|-------------|-------------|
| (in million pesos) | | | | | | | | | | |
| Net Sales | 9.89 | 23.62 | 19.58 | 7.04 | 3.72 | 7.60 | 12.78 | 17.86 | 3.68 | 105.77 |
| Less: Cost of Sales | 6.85 | 14.55 | 14.27 | 4.50 | 2.37 | 4.67 | 10.28 | 13.75 | 3.06 | 74.30 |
| Gross Profit/Loss | 3.04 | 9.07 | 5.30 | 2.54 | 1.35 | 2.93 | 2.51 | 4.11 | 0.62 | 31.47 |
| Less: Operating Expenses | 2.62 | 6.59 | 5.76 | 2.24 | 1.43 | 1.81 | 2.76 | 1.56 | 0.29 | 25.07 |
| Income (Loss) from Operations | 0.42 | 2.48 | (0.45) | 0.30 | (0.09) | 1.12 | (0.26) | 2.55 | 0.33 | 6.40 |
| Add: Other Income/(Expenses) | 0.04 | 0.20 | (0.01) | 0.03 | - | 0.02 | 1.07 | 1.20 | 0.12 | 2.67 |
| Net Income (Loss) | 0.46 | 2.68 | (0.30) | 0.34 | (0.09) | 1.14 | 0.81 | 1.34 | 0.21 | 6.61 |
| PROFITABILITY (%) | 5% | 11% | -1.51% | 5% | -2% | 15% | 6% | 8% | 6% | 6% |

As of December 2005

| PARTICULARS | STA MARIA | KKMI | CEFEDCO | OLDAPRIMCO | IFEDCO | FEDDAFCI | NMFDC | ROXAS | TOTAL |
|-------------------------------|-------------|-------------|-------------|-------------|-------------|---------------|-------------|---------------|-------------|
| (in million pesos) | | | | | | | | | |
| Net Sales | 11.40 | 22.26 | 17.31 | 5.87 | 3.46 | 12.13 | 31.25 | 1.01 | 104.69 |
| Less: Cost of Sales | 8.96 | 13.65 | 11.13 | 3.40 | 2.08 | 10.79 | 21.95 | 0.79 | 72.75 |
| Gross Profit/Loss | 2.44 | 8.61 | 6.18 | 2.46 | 1.38 | 1.34 | 9.31 | 0.22 | 31.94 |
| Less: Operating Expenses | 2.00 | 5.81 | 5.30 | 1.87 | 0.87 | 6.13 | 2.28 | 0.17 | 24.44 |
| Income (Loss) from Operations | 0.45 | 2.80 | 0.88 | 0.59 | 0.51 | (4.53) | 7.02 | (0.02) | 7.69 |
| Add: Other Income/(Expenses) | 0.07 | 0.32 | 0.24 | 0.06 | 0.06 | 1.49 | 1.51 | - | 3.75 |
| Net Income (Loss) | 0.49 | 3.13 | 1.12 | 0.65 | 0.51 | (3.04) | 5.52 | (0.02) | 8.35 |
| PROFITABILITY (%) | 4% | 14% | 6% | 11% | 15% | -25% | 18% | -2% | 8% |



Member Of Dairy Farmers¹ As Of July 1, 2002

| DAIRY FARMERS BY ANIMAL INVENTORY | | | | | | | |
|--|---------------|----------------|-----------------|-----------------|------------------|-----------------|--------------|
| ANIMAL/ FARM TYPE | 1 to 4 | 5 to 10 | 11 to 15 | 16 to 50 | 51 to 100 | over 100 | Total |
| CATTLE | 706 | 250 | 34 | 65 | 11 | 8 | 1,074 |
| Single Proprietors | 124 | 37 | - | 10 | 1 | 2 | 174 |
| Corporations | - | - | - | 3 | 2 | 2 | 7 |
| Cooperatives | 582 | 202 | 32 | 40 | 5 | 2 | 863 |
| Government Owned/ SCU's | - | 8 | 1 | 11 | 3 | 2 | 25 |
| Private Institutions/ NGO's | - | 3 | 1 | 1 | - | - | 5 |
| CARABAO | 3,484 | 310 | 24 | 24 | 4 | 9 | 3,855 |
| Single Proprietors | 2,536 | 275 | 18 | 7 | - | - | 2,836 |
| Corporations | - | - | - | - | - | 1 | 1 |
| Cooperatives | 948 | 26 | 4 | 8 | 1 | - | 987 |
| Government Owned/ SCU's | - | 7 | 2 | 9 | 3 | 8 | 29 |
| Private Institutions/ NGO's | - | 2 | - | - | - | - | 2 |
| GOAT | 4 | 4 | 2 | 11 | 3 | 4 | 28 |
| Single Proprietors | 4 | 4 | 2 | 4 | 3 | 1 | 18 |
| Corporations | - | - | - | - | - | 2 | 2 |
| Government Owned/ SCU's | - | - | - | 1 | - | 1 | 2 |
| Private Institutions/ NGO's | - | - | - | 6 | - | - | 6 |
| TOTAL | 4,194 | 564 | 60 | 100 | 18 | 21 | 4,957 |

¹Based on Bureau of Statistics Survey conducted in July 2002.

Since the last survey, private farms have increased due to entry of new players and the natural expansion of smaller farms