

16

The business of small holder dairy farming

This chapter discusses the key aspects of good farm business management for the SHD farmer.

The main points in this chapter

- Production technology is just one of the skills of good dairy farm business managers. Other skills include monitoring farm production costs, obtaining any necessary credit and finances, marketing the end product, managing labour and gathering information relevant to milk production.
- There are many providers of services for SHD farmers from whom to seek information, much of which is free.
- Such service providers should allow the farmer to outsource as much of his farm inputs as possible, as long as it is viable in an economic sense. The farmer can then concentrate his efforts on what he probably does best, namely convert feed (forages, and concentrates) into milk.
- Input costs in SHD farms can be broken down into four categories: two variable (herd and shed, and feed costs) and two overhead (cash and imputed or hidden costs). Imputed costs are sometimes called 'hidden' costs, which include unpaid family labour and depreciation on farm assets.

Dairy farmers are business managers, irrespective of the size of their milking herd. A successful business is based on a good understanding of the technology underlying the production of the end product – in this case raw milk – and the ability of the manager to run the day-to-day operations at a profit and to make astute decisions regarding investments in its sustainable future. The scale of operation is generally limited by personal asset worth, but even SHD farmers can make good financial returns on their dairy enterprise.

Every day we intuitively manage our personal assets when we make household business decisions at shops, schools and in the wider community. It is the same with the

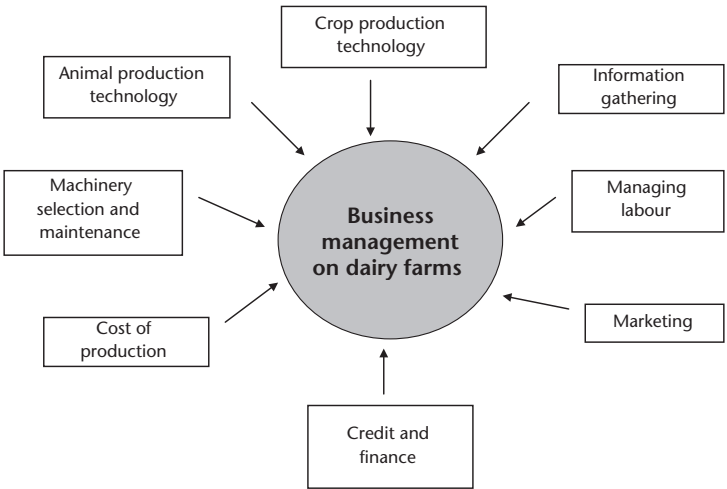


Figure 16.1. The key factors to consider in managing dairy farm businesses

SHD farmer when deciding on today’s livestock feeding program, next week’s crop agronomy program or the optimal herd size for next year’s likely farm gate milk price. Such decisions are based on the elementary frameworks of farm business management.



Brick pillars and roofs are economic in Pakistan.

Most farmers intuitively think about farm costs and returns. However, greater use should be made of ways to make them become aware of the relative importance of all their financial inputs, in terms of their contribution to the cost of production (COP) per kilogram of milk produced on the farm. In addition, when contemplating changes in their routine farm practices, such proposed changes should be appropriately costed to allow them to make more meaningful and timely decisions.

The performance and sustainability of any dairy value chain in the tropics depends on the continued supply of raw milk from the small holder farmers. Economic pressures, such as those experienced by dairy industries throughout South and East Asia, require each farmer to be more aware of their individual COP. Without such skills, farmers cannot prioritise their management decisions to address the high cost items of their production systems.

In addition, better knowledge of farm business management allows support organisations to more clearly define the key drivers of profit on small holder farms. This information can be used to develop regional and national strategies for government departments and national dairy organisations, such as those overseeing producer-driven dairy cooperatives, to routinely evaluate and update their industry policies.

16.1 What is good farm business management?

So, what encompasses good farm business management for small holder in the tropics? Makeham and Malcolm (1986) summarised the essence of successful small holder farming in the tropics. Of the eight key areas of knowledge they listed, five use skills in business management (in *italics*) as follows:

- crop production and protection
- animal production
- machinery selection and maintenance
- *economic aspects of farm management (cost of production)*
- *credit and finance*
- *marketing*
- *managing labour and communications*
- *information gathering.*

From lists such as this, a set of key task areas for good dairy managers can be selected, and within each task area, progress can be quantified through developing a series of key performance indicators (KPIs). The following sections list key tasks for three major management areas on any tropical dairy farm.

16.1.1 Production technology

- Prepare the land then plant, fertilise, weed, water (in some situations) and protect the crop (likely to be a forage crop).
- Harvest, store and market the crop (through livestock rather than in the market place) to get the best return with minimum waste.
- Feed animals properly, prevent disease outbreaks and recognise disease symptoms.

- Achieve high reproductive and survival rates.
- Obtain or produce nutritionally correct feed at the optimum (generally lowest) cost.
- Provide the right housing for effective production, protection, hygiene and harvesting of the animal product.
- Where machinery is involved, choose the most appropriate types for the job, ensure they are properly maintained and serviced, and, when necessary, find a good mechanic.

16.1.2 People skills

- Have harmonious relationships with farm workers by giving them a reasonable amount of responsibility.
- Be interested in the welfare of people working with the farmer.
- Know how to establish a clear chain of command so that each person knows to whom they are responsible and does not have several bosses telling them what to do.
- Set up a system of supervision to ensure the work done is of a proper standard.
- Create a system of communication and involvement, so that all workers know what progress is being made in achieving goals and objectives of the farm operation.

16.1.3 Business management

- Use specialist advisers to help analyse the important physical and financial aspects of the farm business.
- Through appropriate records, and other relevant information, work with an adviser to produce annual farm plans, together with budgets, aimed at producing as much food and money as they need or are able to produce.
- Prepare plans of action in case of abnormal seasons and/or price.
- Plan well in advance so that all inputs are available when required, and in the correct quantities.
- Prepare physical and financial reports at regular intervals, which are timely, accurate, relevant, brief and clear for the persons who control the farm.
- Determine the most favourable forms of credit that can be obtained for different activities.
- Develop good honest working relationships with bankers, financiers or other credit managers.
- Have the ability to prepare realistic applications and finance budgets to obtain credit.
- Have the ability to know when borrowings are too great to be repaid from farm income.
- Assess the different ways of preparing and selling the farm products.
- Work out the best way(s) of marketing (assembling, preparing, transporting and selling) to return the greatest long-term benefit.
- Be able to obtain relevant information on any problem quickly. Information sources could be other successful farmers, extension agents, private agribusiness companies, research workers, libraries, teachers and friends.
- Develop effective thinking and reasoning skills, which should be combined with common sense and even mini 'trial and error' experiments.

16.2 Making the best use of service providers

A good farm business manager should know precisely what he (and his employed and family labour) has to do on his farm to generate profit, how to find out from others what can be done to improve his profit margins and when to seek outside expertise (labour as well as ideas). Small holder farmers generally depend on themselves and their family for labour, but there are numerous sources of ‘good ideas’ available, many of which are free. Such personnel are called service providers and they include suppliers of services and equipment, as well as good ideas. All the service providers in the following list may not be readily available in every SHD farming community, but, if there is sufficient demand, they can be found, particularly for farmers belonging to a dairy cooperative. In many regions, there are dairy equipment suppliers (resellers) or private consultants who can advise on various aspects of farm management. Service providers have a diversity of roles to improve the technical capabilities and the decision-making skills of dairy farmers both small and large scale. These include:

- **Sampling and analysing soils for essential plant nutrients.** This is a routine service used by many Western dairy farmers to plan fertiliser programs for their forage crops. It is frequently undertaken by the fertiliser agent in Asia who mainly deals with farmers growing plantation or other cash crops.
- **Selection of most suitable forage crops for the soil type and local climate.** Agronomists working for dairy cooperatives or suppliers of crop seeds can also advise on the optimum agronomic practices, such as irrigation scheduling (if available), spreading shed effluent, weed and pest control or harvesting interval for improved grasses and legumes.
- **Purchasing concentrate feeds.** Cooperatives often have the buying power to bulk purchase feeds more cheaply than individual farmers. In some cases, they may be the only source of feeds, such as imported calf milk replacers or vitamin/mineral pre-mixes. Cooperatives usually include formulated rations as part of their service to farmer members. It is important for farmers to compare the cost (and milk returns) from formulated concentrates with those for a concentrate mix prepared on farm, particularly if wet by-products (which have a short shelf life) can be sourced quite cheaply.
- **Purchasing forages.** Because of low labourers’ wages in countries such as Indonesia, farmers often spend many hours each day walking around the paddy fields and along the roads to hand harvest forages for their stock. In certain areas, non-farming villagers do this to supply dairy farmers either via direct sale to each farmer or to a ‘grass market’, where farmers can purchase their forage requirements in the market-place. Forage markets have also been established for purchasing crop by-products, such as maize (or corn) stover, delivered by trucks from distant sweet corn growing areas. Following rice harvest, cheap rice straw frequently becomes readily available. It is important to assess its likely milk response and even undertake a cost–benefit analysis to compare it with other forage sources.
- **Nutritional management of the dairy herd.** This is an essential service to get the best out of the young and adult stock in the dairy (or the dairy beef) herd. Nutritionists can advise on availability and cost of alternative feeds, both roughages and ingredients

or home-made concentrate mixtures. They can also advise on the cheapest source of liquid nutrients for milk-fed calves, such as raw milk versus calf milk replacer. Cooperatives or commercial feed mills usually employ nutritionists, but free advice can also be sought from agents dealing with feed additives or other nutritional products. Because feed constitutes the highest cost on farm (60–70% of total costs), it is important to get 'a second opinion' before radically changing the feeding program.

- **Testing feeds for nutrient contents.** There are university, government or even private laboratories that can undertake this service, usually for a fee. It is essential that managers of dairy cooperatives or feed mills routinely test the range of feeds they use, rather than simply depend on an average nutritive value, particularly for concentrations of feed energy and protein.
- **Animal health.** Dairy cooperative or government veterinarians are frequently the major (and only) source of advice on biosecurity and on veterinary drugs and procedures for small holder farmers. Cooperatives may also employ foot trimmers to routinely treat housed stock, particularly those living on concrete floors. A lot depends on the skills and knowledge of such veterinarians and farmers to ensure the most appropriate action to take regarding sick stock, and farmers should occasionally seek 'a second opinion' from other animal health service providers (such as university staff or resellers of veterinary products). Good dairy managers need to develop a thorough animal health program to plan routine and emergency protocols for all their stock. These include vaccination, drenching and other routine veterinary practices, as well as emergencies such as calf scours, heat stress, metabolic diseases or sudden deaths.
- **Best practices for breeding management and artificial insemination.** Dairy cooperatives or government livestock officers usually supply inseminators who should be expected to advise on all things with respect to breeding, or at least be able to source the relevant information or equipment. In some areas, commercial suppliers of dairy semen are also available to advise of breeding programs.
- **Milking cow performance, such as herd recording.** These service providers are important to monitor long-term changes in cow milk yields and reproductive performance and other important measure of genetic improvement. Cooperatives frequently have computer programs to facilitate such recording and help plan realistic breeding programs, whether it be herds with 10, 20 or 50 milking cows.
- **Milking machines.** The performance of milking machines should be checked at last once each year, with routine testing of their efficiency by monitoring pulsation rates and vacuum pressure, and also assessing the condition of liners and other rubberware. Checks should be made of temperatures of milk storage equipment and of hot water to clean milk-harvesting apparatus. Advice on chemicals for washing and sanitising machines, buckets, sieves and teat-washing cloths should also be regularly updated. Suppliers of milking machines should have the necessary skills and measuring apparatus. Some milk processors also employ field officers to visit farm suppliers and advise them on improving both milking hygiene and farm milk yield, to increase their supplies of quality milk.
- **Routine maintenance of farm machinery.** All machinery requires regular attention, such as grease and oil changes for farm vehicles or replacement of worn parts. Such maintenance protocols should be provided by machinery agents.

- **Milk testing.** Most farm gate milk payments are based on measures additional to milk weight or volume, such as milk composition and milk quality. Milk composition measures the concentration of milk fat, and solids-not-fat or milk protein, while milk quality measures the degree of bacterial contamination and the inclusion of adulterating agents. The unit price for milk can have a big influence on farm profitability. Because of its economic importance, milk testing is a routine undertaken by dairy cooperatives and/or milk processors.
- **Milk transport to collection centres.** As dairy regions develop and farmer population grow, farms can become more distant to milk collection centres. As with every bulk commodity, the situation arises when it is cheaper to pay someone to collect the raw milk from the farm and transport to the central location, rather than have to use farm transport and valuable time to take it, twice each day, to the cooperative or collecting centre.
- **Monitoring farm business management.** This service can be supplied by cooperative staff or government staff and by private accountants/advisers. Lending agencies may also assist, but they generally require budgets detailing farm costs and predicted financial benefits arising from their investment in any farm development program. To improve the likely success of a loan application, small holders should seek professional advice.
- **Contractors for capital improvement programs.** Because of the high labour costs, dairy farmers in Western countries have access to a wide range of contractors with specialist skills and equipment for a diversity of tasks, ranging from forage conservation, routine young stock practices, fencing, building sheds or other farm infrastructure, through to employment agencies to find the 'right person for the job'. Apart from builders to construct cow sheds, such contractors are hard to find in Asia.
- **Cooperative service providers.** Some dairy cooperatives, such as those in Thailand, provide a range of services for their small holder farmer members. These include contract calf and heifer rearing, where the cooperative has a facility to milk rear the calves using the waste milk from the milk testing laboratory, after which the heifers are group reared, mated, then returned to the farm just prior to their first calving. Some cooperatives also grow fodder crops on communal land, after which they harvest and ensile them either in tower or pit silos. The cooperative might also bulk purchase other wet material for ensiling, such as agro-industrial by-products. Some cooperatives even have feed centres where all the ingredients for total mixed rations are blended and placed in large containers, such as old 500 kg wool sacks. These are then delivered to each farmer every few days already formulated for direct feeding to his milking or dry cows. In other countries, such as Indonesia or China, the cooperative service also extends to machine milking, either using mini milkers if all the stock are housed in the one big shed or a separate milking parlour for larger herds housed at different nearby locations.
- **Service provision as part of development projects.** Over the last two to three decades, many national and foreign governments, international aid agencies and private sector/non-government organisations have initiated dairy development programs throughout tropical Asia. Such programs provide small holder farmer support through the provision of technical services (usually at subsidised or nil cost),

credit (for specific aspects of farm management or infrastructure) and training. This is still continuing and will for many years. Astute dairy farm managers take advantage of such opportunities.

The major role of service providers is then to allow the farmer to outsource as much of his farm input as possible, as long as it is viable in an economic sense. He can then concentrate his efforts on what he probably does best, namely convert feed (forages and concentrates) into milk.

16.3 Breaking down costs on small holder dairy farms

The actual costs of producing milk of SHD farms are the sum of two components:

1. Variable (or direct) costs, which are directly related to the farm's milk output and so to the amount of variable inputs, such as fertilisers, purchased concentrate and forages, and herd costs.
2. Overhead (or fixed) costs, which are not directly related to the amount of milk sold by the farmer, because they must be paid whether or not anything is produced. These include land rent, government land taxes, loan repayments and other finance costs, and living expenses. Labour costs can be categorised either as overhead or variable, but in this manual they will be considered as overhead costs.

For the purpose of calculating the cost of production (COP) of milk production on SHD farms, costs can be broken down into four categories: two variable and two overhead (Moran 2009b) as follows:

1. Variable costs:

- herd and shed costs, to maintain the entire dairy herd and to harvest the milk
- feed costs, to feed the milking herd.

The more milk produced and the bigger the dairy herd, the greater these variable costs.

2. Overhead costs:

- cash overhead costs, which involve actual payments, such as for employed labour and interest on borrowed money, rates and other farm administration costs
- imputed overhead costs, or hidden costs because no cash changes hands. Family labour is the classic example where the farmer and his family work the farm, but all too frequently don't pay themselves for their labour. Depreciation of farm equipment is another imputed cost, which only becomes obvious when the equipment must be replaced.

The question often arises, what is the farm manager worth to the business? The answer is either what he could earn if he spent that time being paid to do other work (that is, the opportunity cost of his farm labour), or what it would cost to employ someone else to do his job. With regards the latter, because it requires more skills to manage a large dairy herd (say 100 cows) than a small one (say 10 cows), the bigger the herd and the more complex the job, the greater should be the manager's operator's allowance or imputed labour costs. This is rarely considered in Asian SHD farming.



Small holder farmers in Malaysia collecting farm data input costs.

This COP analysis includes finance costs on borrowed money. It is the choice of the farm business adviser as to whether interest on loans is included as a cost of producing milk on Asian small holder farms. Because they can constitute a major cash outlay each year for SHD farmers, they should be included in his annual financial commitments and future farm budget projections. Consequently, they have been incorporated into this particular COP analysis. This decision highlights the importance of clearly describing the particular components of any financial analyses so the reader is clear as to exactly what is and what is not included in the final 'bottom line' measure of COP.

Unfortunately, this is rarely the case, leaving the reader unsure as to how such data can be interpreted and, importantly, compared with other COP estimates undertaken by other dairy farm management specialists, who may be using different methodologies.

Fuel and oil are normally included in the feed costs, although some farm economists consider repairs and maintenance of farm machinery as an overhead rather than a variable cost. It doesn't really greatly matter as long as it is only included once.

Because dairying is frequently just one of the enterprises on many small holder farms, it is important to consider only the costs relevant to and the income generated from the dairy enterprise. Such apportioning of farm finances is often not easy because labour units, machinery and farm facilities are frequently used for a diversity of farm enterprises. In addition, if feed for any dairy animals (young stock as well as adult cows) is produced from a cropping enterprise on farm, such as rice straw or maize stover, it should be given a cost to the dairy enterprise.

The total COP is then the sum of all farm costs included in Table 16.1 and Figure 16.2. Unfortunately, one still finds published estimates of COP for SHD

Table 16.1. Categorising farm costs on small holder dairy farms

| Category | Costs | Detail |
|----------------|---------------------------------------|---|
| Variable costs | Herd and shed costs | 1. Artificial insemination; inseminator, semen, drugs associated with reproductive management 2. Young stock; raw milk or calf milk replacer, concentrates and roughages and herd management to point of calving 3. Animal health; veterinarian visits, drugs, vaccines and drenches 4. Milk harvesting; rubber liners, detergents and sanitisers, maintenance of milking machines, hot water, transport to milk collection centre, cooperative commission |
| | Feed costs (for milking and dry cows) | 1. Purchased concentrates; formulated or ingredients 2. Purchased forages; grass, roughage by-products 3. Home-grown forages; fertilisers, irrigation, processing/storage, weed and pest control 4. Machinery; fuel and oil, repairs and maintenance |
| Overhead costs | Cash overhead costs | 1. Paid labour 2. Farm rates 3. Farm administration and insurance 4. Finance costs; interest, bank fees 5. Other; such as telephone, professional advice, office equipment, postage |
| | Imputed overhead costs | 1. Family labour, such as operator's allowance 2. Depreciation |

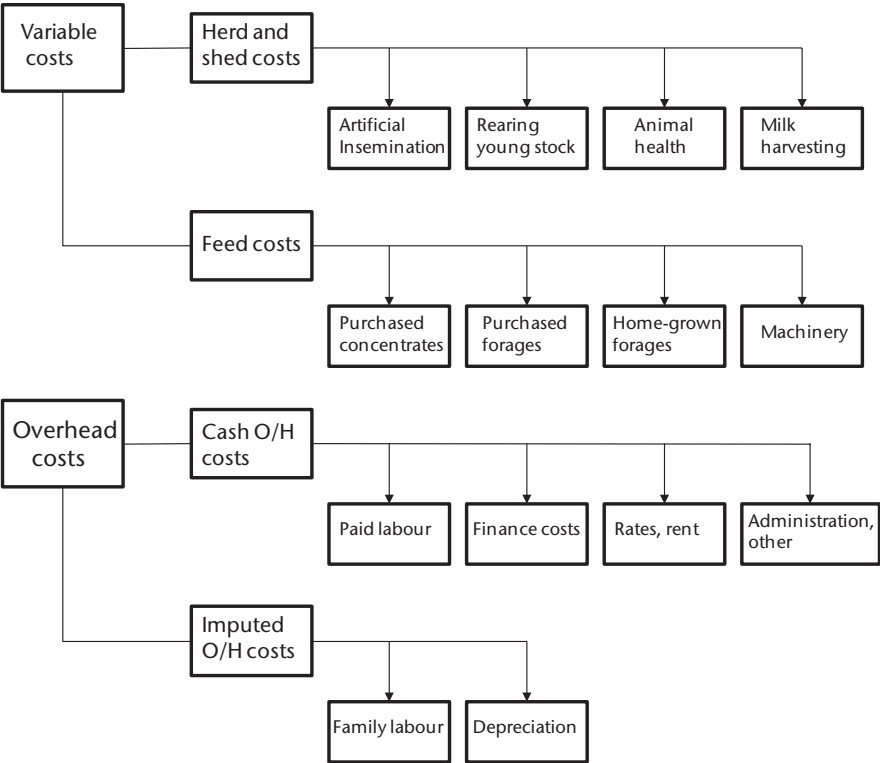


Figure 16.2. Farm costs for small holder dairy farms

operations that do not include family labour and finance costs. These create a false assessment of the true costs of dairy farming and, if used to base government policies for dairy development and even milk prices (as in some countries), they do not paint the true picture of the economics of SHD farming.

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