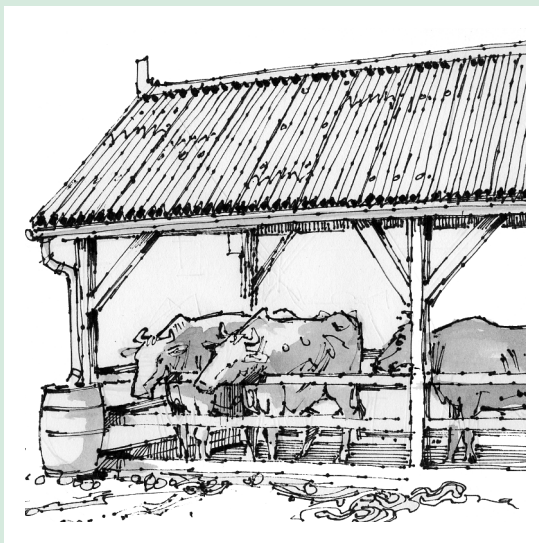
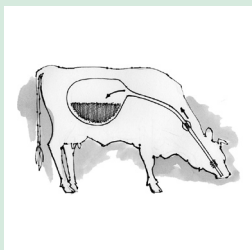


Dairy cattle husbandry

More milk through better management

Agrodok 14 - Dairy cattle husbandry



partageons les connaissances au profit des communautés rurales
sharing knowledge, improving rural livelihoods

Agrodok 14

Dairy cattle husbandry

More milk through better management

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Foreword

This Agrodok provides information about the main aspects of dairy farming in the tropics such as feeding, breeding, health care, reproduction and recording. It is meant for smallholders with some education and some knowledge about dairy cattle. The second target group are technicians like extension and animal production officers, who as advisers can assist smallholders planning to start or improve milk production.

A production of 1500 to 3000 kg milk per cow per year seems feasible for smallholders and this is the assumed level of production in this booklet. A combination of improved management and genetic improvement of the herd can also contribute to increasing milk production. However, farmers who only have a few cows, a long calving interval and high calf mortality, have little scope for selection of replacement heifers. Furthermore, selective breeding may be difficult, especially when the choice of semen or bulls is limited. Seek expert advice from an animal breeding centre, if available.

The booklet is the product of intensive cooperation between the three authors, who together have over 100 years of experience in milk production and dairy development in Africa, Asia, Europe and Latin America. We sincerely thank everyone who helped in its preparation, including the peer readers. Special thanks go to Paul Snijders for his contributions to Chapters 2 and 3, and to Richard Burnie who did the drawings.

While we hope this Agrodok will help farmers make their dairy production more profitable, we will be grateful for any comments, suggestions, additions and criticism.

Deventer, 2008

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1 Introduction

In Latin, the word for money is derived from the word for cattle.

Demand for dairy products is increasing worldwide. Governments encourage the milk production of dairy cattle, and sometimes also of buffaloes, sheep or goats. While some countries have a tradition of milk production and consumption, elsewhere dairy farming and the consumption of dairy products is rather new.

Dairy production can be economically attractive, but the keeping of dairy cows is labour intensive, 365 days of the year! Moreover, cows are expensive and vulnerable animals and milk is a very perishable product.

At national or regional level dairying needs a well-organized infrastructure and the availability of support services: marketing facilities; breeding, health and extension services; and a reliable supply of inputs like concentrates and fertilizers. Farmers need knowledge, skills and management capacities.

In practice, the milk production of dairy cows is often disappointing and far below their genetic potential. The main causes are: (1) late age at first calving; (2) low average production per day; (3) short lactation period; and (4) prolonged calving interval. Moreover, poor reproductive performance and high calf mortality frequently results in insufficient replacement stock.

The management of dairy cows is complicated due to fluctuations of roughage availability and quality throughout the year, and to variations in the animals' nutrient demands during growth and lactation. Health, feeding and reproduction management for efficient milk production requires specific knowledge, skills and good management.

1.1 Keeping dairy cows

The main reasons for farmers to keep dairy cows are:

- Income: dairy cows provide regular cash income from daily milk sales, usually at a known price, plus occasional sales of surplus stock (bull calves, culled cows, breeding stock).
- Resource utilization: crop residues, 'roadside' grasses and labour, which would otherwise provide no income.
- Manure: the availability of manure and the opportunity to make compost for the fertilization of fodder and crops.
- Income can be generated even on a small piece of land or for landless farmers.
- Investment: investment in cattle prevents devaluation of your money and is good insurance.

However, one should be aware of the risks:

- Investment security: cows represent a big investment, lost easily through disease or theft.
- The product 'milk': milk spoils rapidly if not handled or kept well, in which case it cannot be sold.
- When starting a dairy farm with young stock demands time and considerable investments before the cows start producing milk and income.

1.2 Farming systems

There are many ways of keeping cattle for milk production. The one you choose will depend very much on local conditions, most importantly climate, infrastructure, land availability and local traditions. Two main systems can be distinguished. In Africa dairying is traditionally based on mixed farming with grazing of natural pastures and along roadsides. In Asia the traditional system is 'cut and carry', which also offers landless farmers the opportunity to keep dairy cattle.

Extensive systems where cows are only grazing are not very appropriate for dairy production. The two main systems discussed in this booklet are: grazing with supplementary feeding; and the cut and carry sys-

tem or zero grazing. In East Africa, zero grazing is often linked with free-stall housing and the establishment of high yielding grasses like Elephant grass. In reality, overlap and combinations of systems exist all over the world. The systems are defined according to the way the animals are fed or supplied with roughage, because this is the most important aspect of dairy production.

Grazing with supplementary feeding at night

In this system the animals graze during the day in paddocks on natural or improved pasture, are tethered on privately owned or communal land or are herded on communal land or along roadsides. Usually they are stabled at night.



Figure 1: Supplementary feeding after grazing

However, although this system can be used if enough land is available, it frequently comes under pressure due to land fragmentation and management problems for cows grazing on communal land and along roadsides. Danger of traffic accidents, exposure to diseases, undesired breeding and conflicts with neighbours are among the negative aspects of grazing along roadsides and communal land. Supplements such as fodder crops and crop residues can be produced on the farm itself combined with purchased concentrates and minerals. Dairy cattle should always be offered roughage and water during the night. Young stock and cows in early lactation probably need concentrates. Landless farmers can keep dairy cattle on the basis of roadside and communal grazing.

Zero grazing or cut and carry system

Traditionally this is a tie (stall) system. Zero grazing means that the animals are kept day and night in one place and all feed and water is brought to them. Dry cows and young stock are sometimes allowed to graze in a paddock or are tethered in the field. Grass and fodder crops can be cultivated or collected from roadsides, riverbanks and forests. In East Africa zero grazing is closely associated with planting of Elephant grass and free stall housing. Fodder banks of tree legumes, for instance, can be established and farm crop residues utilized, collected or purchased in the neighbourhood. This is a more intensive system of dairy production. The prevalence of tick-borne diseases is an important reason for using a cut and carry system rather than grazing, predominantly in Africa.

Meat, through the sale of bull calves and cull animals, is usually a by-product. To keep the animals clean, manure should be collected and stored properly for use in the fields. A roofed cowshed enables rain-water to be collected, see Figure 2.

The cut and carry system requires considerable investment, labour and knowledge and therefore a reliable market and milk price. Favourable government policy and adequate support services are needed as well. Through intensification of roughage production resulting in higher

yields per unit land, and better management of animals, milk production will increase and less land may be required. The dry matter (DM) yield of one hectare of unimproved natural pasture is about 3000-4000 kg per year, but with good management and the use of manure and fertilizers, the DM yield of Elephant grass can be 8000 to over 15000 kg per year.

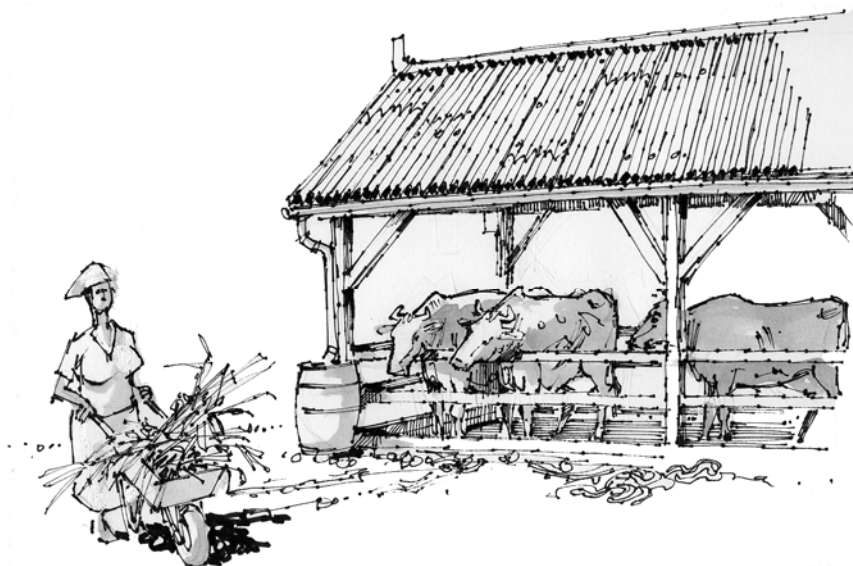


Figure 2: Zero grazing

1.3 Production of more milk

Dairy farming is a long-term investment and requires well-calculated decisions to avoid disappointing results. Take note of what other farmers in the area are doing. Collect information from other dairy farmers in the neighbourhood, paying special attention to reliable marketing of milk and cost of inputs.

Information and advice may also be obtained from local authorities like the extension service, the department of livestock development and the milk collecting organization. A farmer's organization can be

very helpful and may give producers a platform for voicing their opinions and representing their interests.

In order to decide whether to take up dairy cattle farming, or improve the present farm, various aspects should be considered:

- Starting or intensifying dairy production requires serious investment and commitment, only justified if the milk can be marketed at an attractive price.
- Is dairying attractive and profitable now and in the future? Calculate the actual cost price and estimate the future milk price.
- Is there a market for your milk and is it reliable? Is the milk collected and marketed by a well-known cooperative or dairy company, once or twice a day? Or is the market informal, selling directly to customers or middlemen. Milk is a very perishable product and should be sold within a few hours.
- What is the real price the farmer receives? To recover the cost of collection, transport, administration and management, the cooperative or associations often deduct overhead costs. This can be 20% or more of the announced milk price.
- Is the climate suitable for dairy farming and how is the roughage supply throughout the year? What is the duration and severity of the dry season(s)?
- What is the availability and cost of loans, labour, land and inputs like concentrates and fertilizers?
- Intensification always means more labour. Is extra labour with the required qualities and skills available within the family or from hiring? Keeping dairy cows demands attention 365 days of the year and quite a few hours per day, weekends and holidays included. It means that hiring or training skilled and reliable labourers may be essential when expanding the dairy farm.
- Dairy production demands investments, such as animals, roughage production, housing, utensils and concentrates. Moreover, because cash benefits are rarely seen on the short term, special credit facilities may be required.
- Are reliable organizations for veterinary and breeding services available, also during weekends and holidays?