Quality is king

The success of Africa's dairy industry has been built on consumers' confidence in the quality of the products they buy. Dairy operations must be able to meet the everyday task of producing a high quality product under hygienic conditions.

The production of high quality milk depends on the maintenance of excellent hygienic standards, as well as treating the animals as part of the farmer's family.

Emphasis on the monitoring of animal and facility hygiene, can help to ensure that the milk you produce, continues to meet consumer demands. Milk quality can only improve if the quality is tested at farm level. You will be rewarded with a premium price for your high quality milk.

Our lead story from Rwanda looks at controlling mastitis in order to improve quality. This article discusses the benefits of mastitis control and gives a general overview of the problem in Rwanda. We also have an exciting read on the dos and don'ts of good milk production. This article looks at production losses, hygienic production, handling and marketing.

Climate change is having terrible effects on the sustainability of farmers, with Africa being most affected. We look at how smallholder farmers are coping with this threat.

Growth in milk production slowed down in Africa last year due to a number of issues such as drought and the economic meltdown. Many farmers, especially in Kenya, went out of business as thousands of livestock died due to drought.

Remember that farming should be considered as a business and only if you give your cows what they need (appropriate housing, feed and management), the economics of dairy farming are positive. Poor quality farming not only reduces milk yields, but also causes poor health, prolonged calving intervals and infertility, which will most likely lead to economical losses!

It is our hope that most of the farmers will find this year more exciting and will do better to take advantage of the positive-looking economic situation.

We also take this opportunity to wish Esada a successful conference. We will be covering the event in Kigali.

We also wish the African dairy sector a successful 2010.

Editor

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On the cover: The production of quality milk is essential for a healthy dairy market

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Briefly | Africa

Dairy farming requires commitment

Dairy farmers have been encouraged to work hard in addressing the problem of milk shortage in Botswana. The call was made by the deputy minister of agriculture, Oreeditse Molebatsi, during a meeting with farmers in the Serowe region.

He told farmers that locally, the country was able to get only eight million litres of the required 48 million litres of milk annually. Molebatsi, however, cautioned farmers that dairy farming was an expensive exercise that needed an individual's total attention, and urged them to leave other types of farming and focus on milk production.

The deputy minister was responding to comments by Serowe Milk Marketing Management Association's chairman, Baliki Keboletse, who was briefing the minister about their challenges. – *BOPA*

Product imports feared

The Milk Producers' Organisation of South Africa said it was concerned that the ongoing drought in the Southern Cape, could result in a spike in the number of dairy products being imported.

The MPO confirmed that between 10-15 dairy farms in the region have halted production, as a result of diminishing grazing land and climbing feed costs. The Southern Cape is one of the country's biggest milk-producing regions. The organisation's national director, Dèan Kleynhans, said South Africa's milk supplies may dwindle in the coming months. – *Eyewitness News*

Uganda dairy cashes in on regional trade

Uganda's dairy industry is likely to cash in on limited trade barriers, as the East African Community (EAC) integrates even further. Officials within the dairy sector are optimistic that the EAC integration will bring opportunities to their businesses.

Anoop Sharma, Sameer Agriculture and Livestock's general manager, said that with too much milk supply, Ugandan businesses are going to benefit from the limited trade barriers that come with the integration to exploit new markets in the region.

"The opportunity is that we are able to send our milk to neighbouring countries without much problem," said Sharma. The expected fast clearance of milk trucks (milk being a delicate and perishable good) at border posts is expected to boost Sameer's access to regional markets, and a corresponding bigger share of Kenya's market is on the cards. – *The Observer*

East Africa supports milk traders

East African governments have put to a halt to fighting informal milk traders and have instead come up with a strategy to support them with technology and equipment. Traditional or informal milk markets control more than 80% of marketed milk within the region.

Kenya, Uganda, Tanzania, Rwanda and Burundi under the East Africa Dairy Regulatory Authorities Council (EADRAC), say research suggests the informal sector would continue to co-exist with the formal players.

"There is need for enabling policy to help facilitate the ongoing transformation and modernisation of the traditional sector, and to build stronger synergies with the formal sector," the council said in a communiqué released after a two-day meeting in Nairobi.

Kenya Dairy Board managing director, Machira Gichohi, who is EADRAC chairman, said policymakers should engage constructively with traditional markets rather than oppose them directly, particularly as demand for food safety may grow with increases in disposable income. – *The Nation*

East Africa moves to quality payment

The East African region's dairy regulatory authorities said concerns about public health and consumer safety, should be addressed within the industry. They said training and certification had proven successful in improving milk quality.

"Moving to quality-based payments, provides a strong incentive for improving quality and safety of milk and has been successfully trailed in India and should be encouraged in East Africa," they said.

> *"Research in Assam showed how small and inexpensive innovations such as supplying lactometers, which measure water in milk, to consumers could drive up milk quality"*

This emerged at the Nairobi symposium organised by International Livestock Research Institute (ILRI), with attendance from the Indian state of Assam, which has a vibrant informal milk sector. Research in Assam showed how small and inexpensive innovations such as supplying lactometers, which measure water in milk, to consumers, could drive up milk quality.

A study by ILRI, Nairobi, Sokoine University of Agriculture, Tanzania, Kwame Nkurumah University of Science and Technology, Ghana's Animal Research Institute, said Kenya's attempt to implement strict international milk quality standards, is clearly not working.

Namibia increases milk production

Most sections of the agricultural sector in Namibia showed considerable improvements during the third quarter of 2009, the Bank of Namibia (BoN) said. In its report, BoN assistant governor, Iipumbu Shiimi, said "agriculture saw improvements in milk and horticulture production and more cattle marketed, but the marketing of small-stock declined".

The report says milk production in the review period increased by 16,6% compared to the second quarter of 2009, and 4,7 million litres were produced. Between April and June last year, only four million litres of milk were produced.

It also said more cattle were marketed with an increase of 10,6% during the third quarter of 2009, coming to just above 150 000 cattle sold, mainly to South Africa. – *The Namibian*

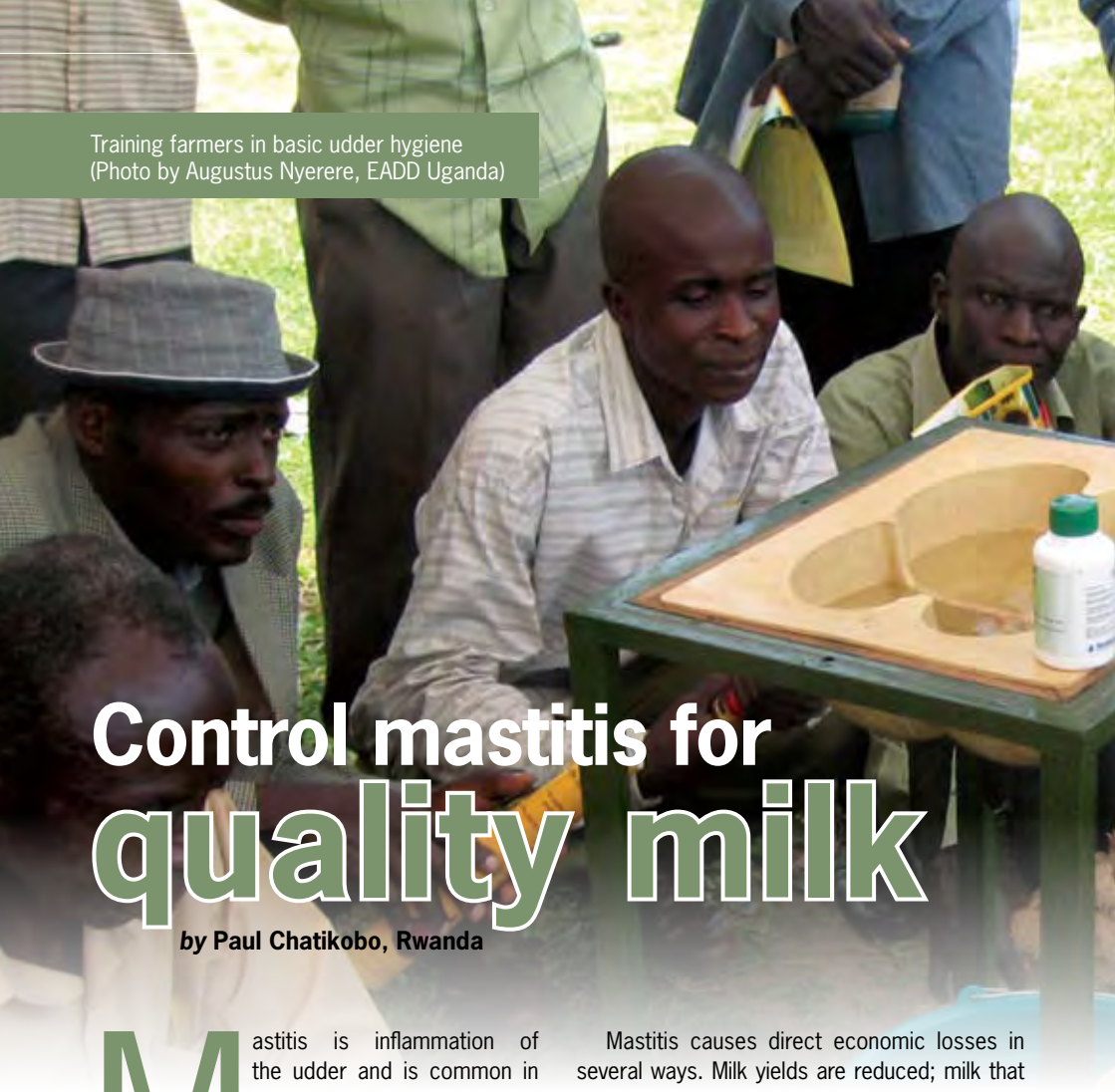
Disease outbreak in Magoye

A suspected cattle disease has broken out in Magoye Constituency in Mazabuka District in the Southern Province of Zambia. The disease, which causes cattle to pass bloody urine and stools, is reported to have claimed 15 animals so far.

Magoye constituency member of parliament, Bennie Mweemba, confirmed the outbreak of the disease in an interview in Lusaka. Mweemba named the family at Mabanga village in Chief Sianjalika's area, as the most affected.

The MP has since appealed to government through the ministry of agriculture and co-operatives, to deploy veterinary officers to Magoye, to contain the disease before it spreads to others districts in the province.

He stressed that most small-scale farmers in Mazabuka depend on rearing animals, not only for prestige, but also for economic purposes. – *The Lusaka Times* DMA



Training farmers in basic udder hygiene (Photo by Augustus Nyerere, EADD Uganda)

Control mastitis for quality milk

by **Paul Chatikobo, Rwanda**

Mastitis is inflammation of the udder and is common in dairy herds. It is responsible for major economic losses. Mastitis can be caused by bacterial, chemical, thermal or mechanical injuries. It can therefore be infectious (caused by microbial organisms) or non-infectious (resulting from physical injury to the udder).

Mastitis can also be clinical or sub-clinical. Whatever form it takes, mastitis cannot be eradicated, but can be reduced to low levels through good management of dairy cows.

Mastitis causes direct economic losses in several ways. Milk yields are reduced; milk that is abnormal or contaminated with antibiotics cannot be sold; there are veterinary and antibiotic expenses; there is a higher than normal culling rate and occasional fatalities. The milk processing industry also incurs losses, because of problems resulting from antibiotics in milk, and the reduced chemical and bacterial quality of the milk.

Benefit from quality

Producing quality milk has many positive benefits for the milk producer. Research has shown the importance of lowering the somatic cell

count (SCC) in a herd. It is estimated that, depending on the severity of sub-clinical mastitis, cows can fail to express up to 12% of potential production per day, when SCCs are above 1 x 10^6 cells/ml of milk.

However, each time a farmer halves the SCC in his herd, there is an average increase of 0,6 kg milk per cow per day. Thus, lowering a herd's SCC from 400 000 to 100 000, increases herd production by 1,3 kg per cow per day.

Most processors (dairy plants) offer cash premiums for lower SCC-milk. The farmer not only gets more milk, but he or she also receives a higher price for better quality milk. Thus, quality milk programmes will increase the milk producer's profitability. The important question is: Does this disease occur in Rwanda, and what does it take to reduce it?

Mastitis in Rwanda

In an emerging dairy sector, the two most important issues are how to increase production and how to safeguard human and animal health. For the past decade or so, the focus of the government of Rwanda has been on increasing milk production, while measures to safeguard human and animal health have lagged.

Most of the milk produced is marketed

through the informal channels. However, the safety and hygiene of the milk produced in traditional setups and marketed through the informal sector, have been a major course of concern for policy-makers and development agents. For this reason, Team ABS TCM in 2009 conducted some pilot studies to establish the prevalence of sub-clinical mastitis.

Sixty-six bulk milk samples were randomly tested for mastitis and 42 were positive, yielding a prevalence rate 63,6%. After the bulk tests were conducted, the milk quality team went on to carry out individual mastitis checks on farmers' cows.

Of the 29 cows examined, 17 were positive, giving a prevalence of 58,6%. The preliminary surveys on mastitis prevalence, show mastitis as a common disease among milk cows. Clinical mastitis prevalence in Rwanda is estimated at 15%. In practice that presents an estimated population of cattle with sub-clinical mastitis at 20%.

Based on the results of our pilot studies, we can confirm that mastitis is indeed a milk quality challenge in Rwanda.

The answer lies in training milk producers in husbandry practices and cow-side milk technologies which reduce the prevalence of mastitis. The East Africa Dairy Development (Eadd) project's training efforts can result in production of large volumes of milk, but if the milk does not meet certain quality standards, the whole exercise becomes futile.

Improving udder health

One of the most challenging aspects of quality milk production, is fine-tuning the milk producer's milking procedures. Milking procedures usually account for over 70% for mastitis in the herd. Many farmers are taking all the steps necessary, although not in the correct order for maximum benefit.

Good milking habits are mostly common sense. These practices include having the teat

Good milking habits, such as drawing milk into a strip cup, are essential for the prevention of mastitis (Photograph by Susan Atyang, EADD Uganda)

clean, dry, and properly stimulated before milking. The cow's udder is the milk-producing tissue. When it is inflamed, there is decreased milk production, and modification of the composition of milk, affecting its quality. Lactose content in pathologic milk is decreased because of decreased synthesis in inflamed udders.

The cost of technology

While prevention costs are estimated at US$39,04/cow/year, treatment costs can exceed US$52,38 per cow per incidence. A mastitis prevention programme therefore offers substantial savings and represents approximately 7% of the current estimated sub-clinical losses.

Overall, farmers in Rwanda can lose up to 293 litres per lactation due to sub-clinical mastitis. The estimated 12% loss per 305-day lactation of a cow averaging 8 litres per day, is valued at US$83,34/cow/year.

EADD offers a milk quality service (MQS) for smallholder farmers in the region. The purpose of the MQS is to reduce both the sub-clinical and clinical incidence of mastitis within a dairy herd. The emphasis is on good milking practice and testing, because you cannot treat what you do not know.

Our take-home message: Know your milk quality status, test for mastitis and institute early treatment! DMA

Fodder can refer to fresh forage and can also be conserved feed for use by livestock at a later date (Photograph by Fidelis Zvomuya)

A concise "dictionary" of dairy terms (Part 2)

by **Raymond E Zvavanyange**

In the December 2009 edition of Dairy Mail Africa*, we discussed the need to make dairy farmers technically competent by explaining the common terms used by dairy farmers. In Part 1 we discussed the common terms relating to breeding and genetic improvement. In this edition, we look at the terms which related to animal feed and nutrition.*

Feed and nutrition

Agroforestry: The wise management of trees, crops and animals on the same piece of land. Agroforestry species are multi-purposed, meaning they provide more than one useful function, e.g. fodder, fuel wood, improve soil fertility, medicine, shade, live fences, etc. Agroforestry trees could be indigenous or exotic. Indigenous trees growing naturally in grazing lands which are browsed by livestock are: *Ziziphus mucronata* (Buffalo Thorn Tree) and *Bidens biternata* (Black jack). Exotic trees species include *Acacia* sp., *Leucaena* sp., *Glicidia sepium*, *Calliandra calothyrsus*, *Sesbania sesban* and *Cajanus cajan* (Pigeon Pea). Trees can be grown to provide a protein supplement to cattle, especially during the dry season. This helps to reduce the expenditure on commercial concentrates and improves the profitability of the dairy enterprise. Agroforestry species can be used as supplementary feed.

Bacteria: Very small, single-celled organisms. They are plants, not animals. In cattle, they have got important functions in the rumen (paunch). Certain bacteria cause diseases such as anthrax and blackquarter in cattle.

Bloat: Accumulation of gas in the rumen as a result of fermented feeds. Gases accumulate in the rumen and cannot be released in the usual way (by belching or burping). This usually happens when animals are first turned onto young, lush grass or clover, particularly when it is wet with dew. The animals eat greedily and overload the rumen. **Treatment:** (1) For mild cases, walk the animal for half mail; (2) Use of bloat guard: (3) A veterinarian will puncture the paunch with a knife, trochar and canula, if absolutely necessary.

Butterfat: Fat content of milk

CP: Crude protein. This is the total nitrogen-containing material, both protein and non-protein, determined by chemical analysis of nitrogen and expressed solely as protein.

Dairy meal: Concentrate supplements. Concentrates are feeds high in nutrients. They include grain crops and residues from industrial processing of grains and other feedstuffs for human consumption. Ruminants need some concentrates. An example of the composition of milk production feeds from a local manufacturer: **Name of feed:** Dairy Milk Maker Meal / Cubes. **Protein content:** 16 % Crude protein. **Extra product information:** A high energy milking supplement suitable to balance roughage with a high protein to energy ratio such as good quality pasture and legume hays. Feed approximately 0,4 kg balanced with ad lib (without restriction) ryegrass pasture per kg of milk produced.

Digestibility: The proportion of ingested food energy not excreted in the manure. Digestibility is given as a percentage and is calculated as follows: [(Intake less Output) / Intake] x 100%. Digestibility is important as

it gives the nutritive value of a feed. Digestibility can be determined in the laboratory (in vitro) or in the live animal (in vivo) by a range of scientific experiments. An example is that of fodder trees: High protein content and high digestibility (Forage group) = *Leucaena leucocephala and Gliricidia sepium.*

Fodder: This is animal food of plant origin. These could be plant leaves, stems or pods. Fodder is also called forage. Fodder also refers to conserved feed for use by livestock at a later date. Forage trees leaves can be fed to dairy cattle as sole supplements or as mixtures with other tree forages or with commercial concentrates. Conserved fodder types include leaf meal, hay and silage.

Home grown feeds: Feeds grown and produced wholly at the farm. The increasing cost of stock feeds has led to promotion of using homegrown feeds at a dairy farm as it reduces costs. Maize can be grown at the farm for silage.

Lactation: (1) The production of milk by the mammary gland of female mammals. (2) The period during which milk is produced, i.e. in dairy cows this is normally 305 days.

Pasture: An area which have been established with introduced forage plants synonymous with planted or artificial pastures. An example of forage plants is grasses (ryegrass, Bana grass and Napier grass).

Ration: The correct amount of feed to give an animal every 24 hours. It should be "balanced" – containing the correct proportions of nutrients (carbohydrates, protein, fat, minerals, and vitamins) for the type of animal being fed.

Raw materials: Single units constituting a complete material. Raw materials are sometimes called "ingredients" of a feed. Examples include cotton cake, soybean, barley straw and salt.

Total mixed rations (TMRs): A mixture of both the roughage and processed ingredients, formulated to supply the cows requirements in a form that precludes selection. It is designed to be the only feed source given over a 24 hour period and fed without restriction [ad libitum] for optimum results. The key to TMR is (1) good forage quality (2) accurate weighing of all components (3) correct balancing of the ration (4) monitoring of feed intake

Rumen: The first and largest stomach compartment of a ruminant.

SNF: The solid component of milk other than fat (solid-not-fat).

Supplementary feed: Feed given in addition to the normal accessible daily feed. Examples of supplementary feed are hay, silage, concentrates, crop residues, etc.

Toxic: Poisonous.

Urea: The most widely used non-protein nitrogen feed supplement.

Zero grazing: When feed is cut and given to animals while confined in a particular area. The advantages of zero grazing are: (1) Can monitor the weight gain of animals easily. (2) Reduces the number of pests e.g. ticks and intestinal worms, since animals do not graze on infested pastures. (3) Allows the intensive use of land for growing fodder, and maximises use of available land. (4) Reduces damage to crops by grazing cattle. (5) More time for dairy farmers to do more productive work. The disadvantages of zero grazing are: (1) Requires labour to cut and carry the feed and to fetch water. (2) Building and maintenance of the shed and pit requires is costly. DMA

Mary Senja believes that small-scale dairy farming will not be profitable under the current weather conditions

Can smallholders survive climate change?

by **Fidelis Zvomuya**

As world leaders flocked to Copenhagen last year, thousands of protestors for and against a global climate pact, filled the streets of Denmark. Thousands of kilometres away, in a poor drought-ravaged village of Lokiriana in the pastoral areas of Turkana district in northern Kenya, it may be difficult to see a link between the climate negotiations and this place.

Hard-hit by successive years of low rainfall that resulted in a worsening food situation, crop failures and livestock dying, the residents think it's a curse from God. Out of a population of around two million goats and sheep, around 300 000 died in Turkana district during the recent drought.

More than 10 million people don't have enough to eat, resulting in the Kenyan government declaring the affected areas a national disaster. Mary Senja, a Masai widow and mother of six, who ekes out a living through agricultural activities by mainly milking her two cows and selling the product to local communities, says she will not survive another year of drought.

Senja says small-scale dairy farming in Africa might not be profitable under the current

weather conditions, which have changed over the past 20-30 years.

"Successive years of low rainfall have resulted in a worsening food situation. Crops have failed and livestock has died," Senja says. Despite her little knowledge of what climate change is, she believes it is the reason behind the area's fate.

Farmers can provide solutions

International Federation of Agricultural Producers (IFAP) president and Zambian livestock and dairy farmer, Ajaykumar Vashee, says that agricultural production and access to food in many regions of the world, may be severely compromised by climate variability and change. Vashee says that despite the fact that some farmers have always evolved and adapted to ever-changing environments, they remain exposed.

"This makes farmers key stakeholders in the solution to the problem. They suffer from major handicaps in fulfilling their potential. These include lack of financial resources, incentive to innovate, policies to help them, and pressure on resources leading to degradation and short-term time horizons," he says.

> *"More than 10 million people don't have enough to eat, resulting in the Kenyan government declaring the affected areas a national disaster"*

Ethiopian-based agriculturalist, Dr Gashaw Tahir, who is also president of the Greenland Development Foundation, says that new options should focus on helping hungry animals and people adapt to climate change, while mitigating the greenhouse gas emissions of small-scale livestock production systems.

In an interview, during last year's UN Climate Change Conference in Copenhagen, Tahir says, drought conditions blamed on global warming, is the latest source of uncertainty for East African farmers.

IFAP president and Zambian livestock and dairy farmer, Ajaykumar Vashee

"Experts must work to develop climate data that helps growers to pick crops that can take the heat. Drought and spreading deserts are devastating communities across the continent. Unprecedented floods, cyclones, tsunamis and other extreme weather disasters have killed hundreds of thousands and left many more people completely destitute," he says.

On-farm projects

Drawing on several scientific reports and desktop modeling, indications are that small farms with traditional pasture-based systems and grain fed in the dairy, would not be profitable under a medium climate change scenario.

Farmers, especially those involved in livestock production, must accelerate the adoption of innovative manure-to-energy projects on their farms as part of a public-private partnership.

"These projects will largely include biogas digester technology, known as a proven method of converting waste manure into electricity," Tahir says.

Climate changes have a direct effect on crop and livestock production, with human activities over the past few centuries resulting in an increase in the levels of so-called greenhouse gases (GHG). The gases most affected by agriculture are carbon dioxide, methane and nitrous oxide as well as ammonia which,

while not strictly a GHG, contributes to the formation of "acid rain".

According the Food and Agricultural Organisation (FAO), a dairy cow can produce up to 650 litres of methane per day. As well as impacting on the environment, up to 10% of the energy cows eat is lost in this way. So, cutting methane levels makes economic sense too.

"These emissions can be reduced by undertaking farming practices which maximise the utilisation of nitrogen inputs," he says.

Changes that can help

Recently the UK-based DairyCo produced a fact sheet showing how, by making changes such as improving herd health, fertility, manure management, adopting energy-saving practices on farm, modifying feeding regimes and targeted breeding programmes, GHGs can be reduced, benefiting the farm enterprise as well as the wider environment.

But milk processor, Fonterra says that reducing the carbon footprint of dairy farms and reducing greenhouse gas emissions, will cost its dairy farmers $500 million a year by 2025.

It is also said that during the manufacture of dairy products, the main greenhouse gas emission is carbon dioxide from energy used in manufacturing. Carbon dioxide is also emitted during transport and chilled storage of dairy products. But Vashee says well-managed systems to increase home-grown feed production and water use efficiency, could improve profitability.

He argues that improving feeding is one of the key interventions which will relieve pressure on other natural resources such as forests. He cautions that aggregating livestock emissions globally, misses the big differences between developed and developing countries. It is important to separate the two. DMA

A sector worth milking

Adapted from an article supplied by the Technical Centre for Agricultural and Rural Cooperation

The dairy sector has seen spectacular growth at the global level in recent years. But many African, Caribbean and Pacific Group of States (ACP) herds are failing to keep pace with higher yields and dairy production is suffering from cheaper powdered milk imports.

Focusing on local products may be the answer, but although efforts are being made to boost dairy production, the sector is way below its potential in many ACP countries. Experts say governments need to make significant investments to support production, processing and trade, improving breeds, milking equipment and hygiene. As global milk output grows, increasing by more than 20% in the past ten years, production rates in many ACP countries remain low.

Problems in Africa

In Africa, a dairy cow produces an average of just 461 kg/year, compared with 5 874 kg in Europe. Furthermore, in many ACP countries,

the erratic quality of local milk, often due to power cuts or poor conservation facilities, is a constraint to meeting consumer demand.

Disease remains a major problem, especially for small-scale herds in ACP countries. Among the most serious ailments are mastitis and brucellosis. Other obstacles to a vibrant ACP dairy sector, include a lack of processing units, inadequate health monitoring, insufficient collecting structures and the high cost of inputs.

In Namibia, once well-known for its dairy industry, increased expenses have led some farmers to leave the sector. In Madagascar, as in many industries, local milk production is unable to keep pace with growing demand. Lower-priced, subsidised powdered milk, imported from the EU, now dominates the market.

Production potential

In spite of the problems, studies reveal that many countries have considerable potential to increase production and that there is good scope to earn added value through processing. The East Africa Dairy Development Project covering Kenya, Rwanda and Uganda, is helping dairy farmers get their milk to processors more efficiently.

The Zambia Smallholder Milk Processing Extension Programme targets smallholder dairy farming associations in Zambia's Southern Province, offering improved livestock extension services, leading to more opportunities for milk processing. Also, an IT-literacy training programme is helping dairy farmers to use computers to record milk yields and sales.

In Burkina Faso, Mali and Senegal the "I like my milk local" campaign is weaning consumers off imported powdered milk. In Cameroon, livestock association, APESS, has made a priority of the livestock economy based on dairy production, and support to local dairy farmers is leading to improvements in production methods.

In Kenya, the informal economy is helping to boost the local milk trade. A network of 40,000 independent collectors pick up milk from 1,8 million small-scale producers, selling 86% of the national output, fuelling a booming local but also regional market.

In Rwanda, local milk production is increasing due to the Girinka "one cow per poor family" programme launched three years ago. In Bujumbura, the capital of Burundi, owners of bike-taxis have turned their hand to collecting milk since a government decision to ban cows from the city for reasons of hygiene.

With a growing awareness that milk is no longer just a by-product of traditional farming, increasing attention is being paid to breeding, though in Rwanda, government attempts to introduce foreign breeds which produce more milk, have not been entirely successful. Many farmers have resisted trading their local breeds for the more costly imports.

Promising results

As for processing, several examples of "mini-dairies" in West Africa, show promising results. The most successful are those located close to dairy production units. Burkina Faso's National Union of Mini Dairies, has launched its own label, BurkinaLait, and now has 23 mini-dairies as well as producers countrywide. They negotiate production goals with local dairy farmers and are able to make demands over quality and hygiene.

In Burkina Faso, mini-dairies, making products exclusively from local milk are flourishing, though often, local producers cannot keep up with demand. "All we need now is for the dairy farmers to supply us with more milk", said the owner of one mini dairy in Koudougou. DMA

Milk report

by **Fidelis Zvomuya**

Growth in milk production slowed down in Africa last year, as drought affected pasture quality and milk yields. The cumulative effects of poor rainfall/droughts in pastoral and marginal cropping areas in the eastern sector of the eastern African region, as well as issues of civil insecurity/conflict, population displacement, disruption to markets and high food prices, are some of the problems that caused the drop.

In addition, the global economic meltdown had an impact on production, as most farmers were unable to procure inputs. It seems as though milk production within the continent will expand relatively quickly, but only with modest increases of approximately 2% in quantity. This will depend on the increase in productivity of smallholder crop/livestock farmers.

The feasibility of this is demonstrated in Kenya, which consists of 80% of all the improved dairy cattle in the continent and where smallholder farmers produce 80% of the milk. Problems hampering production vary and issues such as inadequate feeding, poor health, lack of breeding services and unfavourable policies, all hamper production increases.

Pasture development

In 2009 milk production was expected to grow by just over 1%, reaching 36,6 million tons. In northern Africa, favourable weather conditions fostered pasture growth, and production should was expected to expand by some 5% in Egypt (4,9 million tons), and by a moderate 2% in Algeria (2,2 million tons).

The tight supply situation in eastern Africa is encouraging farmers to invest in pasture development. However, fears over the El Niño effect are expected to adversely impact on dairy production in southern Africa. Several countries reported livestock deaths due to drought. In Kenya, dry weather constrained dairy production.

In western Africa, rains also favoured pasture development, but poor rains and low pas-

ture growth in southern Sudan constrained milk production. Production in South Africa has trended upward in recent years, and was expected to reach 3,2 million tons, growing by a mere 1%, as drought affected most of the country.

Milk production in 2010 is anticipated to reach 37,4 million tons. In eastern Africa, however, the tight supply situation has resulted in firm farmgate prices, and prospects of growth in domestic and regional (Common Market for Eastern and Southern Africa) import demand in 2010, is encouraging commercial farmers to invest in pasture development.

Changing patterns

The latest European Commission (EC) update on developments in international agricultural commodity markets (October 2009 prices) shows dairy prices recovering. Between September and October there were increases of 18,5% for butter, 9,4% for cheese, 10,4% for skimmed milk powder and 6,5% for whole-milk powder. However, these prices are still below the 2007 peak levels.

This strengthening of dairy prices is a result of the combined effects of firmer demand and tighter supply from Oceania, and increased demand from the Middle East, northern Africa and south-east Asia. The weak dollar also appears to have contributed.

Dairy prices have become increasingly volatile since 2007. Prices rose sharply in October and November, and stocks of 268 000 tons of skimmed-milk powder and 150 000 tons of butter now held in the EU. These stocks could undermine the price recovery if they were released onto the market. The EC, however, has so far resisted pressure to sell from intervention stocks. However, if EU butter stocks were released for sale in 2010, it would contribute a 7% expansion of the butter trade.

(Adapted from information of the food and Agriculture Organisation). DMA

Pack your bags and head for Rwanda!

The 6th African Dairy Conference & Exhibition will be held from 19-21 May 2010 in Kigali, Rwanda. This year's conference theme is *African Dairy: Competitive and Sustainable?*

The Eastern and Southern Africa Dairy Association (Esada), the Rwanda Development Board (RDB), the Rwandan ministry of agriculture and animal resources, the Rwanda Conference Committee, Land O'Lakes and other steering committee members, are delighted to invite all the dairy stakeholders to the conference and exhibition.

The event will be held at the Serena Hotel in Kigali, and will be preceded by a farmers' forum on 18 May at the same venue. Accommodation is available at the Hotel. The programme line-up promises conferences, technical talks and seminars, exhibitions, technical tours, social events and awesome scenery.

Regional and international speakers will be presenting topics such as the world dairy situation, dairy policies, animal health and welfare, food safety and hygiene, and much more!

Registration deadlines

Early-bird: 1 March 2010 (Special discounted fee) / **Normal deadline:** 1 May 2010.

For enquiries, contact Peter M. Ngaruiya, Esada Secretariat, PO Box 195-00606-Sarit Centre, Nairobi. Tel +254 20 374 4065, e-mail secretariat@dairyafrica.com.

Visit *www.dairyafrica.com* for more details and reservations. DMA

Photograph by Susan Atyang, EADD Uganda

Milk quality and the East African Dairy Development Project (EADD)

by **Brian Dugdill, EADD chief adviser, Nairobi**

When inaugurating the milk chilling plant established by the new Kabiyet Dairy Company Limited near Eldoret in Kenya in August 2009, the minister of agriculture, William Ruto, famously told the 5 000 local people attending the opening: "Don't count your cows by the number of horns and hooves, but by their output of milk and meat!"

Minister Ruto might well have added that the quality of milk is just as important as the quantity. Applying practical quality assurance regimes at each stage of the cow to consumer dairy food chain, is a vital part of getting milk safely and affordably to consumers, especially during the all-important first stages of the chain.

The keeping quality of milk cannot be improved once the cow is milked, but measures can be put in place to ensure that keeping quality is enhanced during milking and maintained until the milk is finally consumed.

> *"A Lactoscan AMA has just been procured and an incentive milk payment scheme based on year-round quality and quantity during the low season will soon be introduced"*

Payment systems that provide producers with incentives to focus on clean milk production and milk quality, are also a vital part of these measures. With this in mind, the Food and Agriculture Organisation (FAO) of the United Nations recently published the Milk Testing and Payment Systems Resource Book. The book contains sections on:

- How to use the book.
- Milk sampling.
- Milk testing.
- Milk payment systems.
- Examples of milk payment systems.
- Other information sources and references.
- A glossary of key terms.

Abraham Rugut, the chairman of Kabiyet Dairy Company, explaining to visitors how all raw milk purchased by the company is screened for compositional and hygienic quality before purchase (Photo: Bill & Melinda Gates Foundation)

The testing and payment systems were field-tested under challenging smallholder dairying condition in Bangladesh and Mongolia. The lessons learned during this process are incorporated into the book. The book also describes how the recently arrived, low-cost, user-friendly, rapid automatic milk analysers (AMAs) such as the Lactoscan, are revolutionising testing for compositional quality, upon which milk payment systems are initially based.

Instant results

AMAs produce virtually instantaneous test results for temperature, density, fat, solids-not-fat and thus total solids, protein, lactose, minerals (ash), freezing point, added water percentage and pH.

As such, they are powerful tools for facilitating clean milk production and milk screening at collecting points, especially when linked to low-

cost, computerised digital milk weighing and payment systems.

They are also powerful tools for improving and maintaining milk quality, e.g. with 12-volt adaptors, they can travel with milk collectors and provide instant results, with instant printouts to show to farmers.

The Resource book

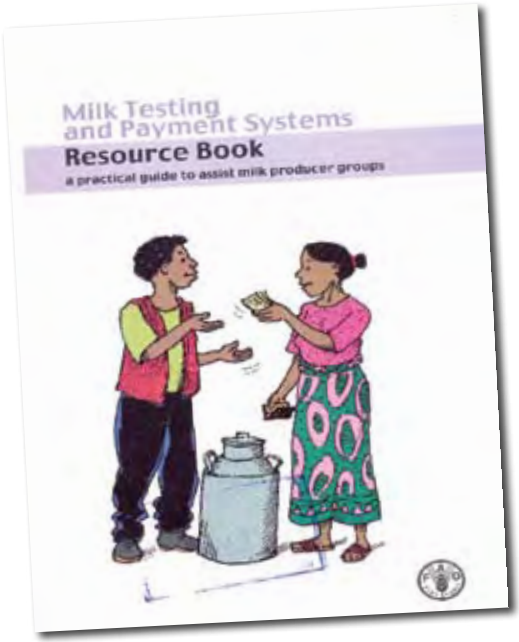
According to the FAO, "the target audience for the book is people working in small-scale milk collection in developing countries. This audience includes milk producer groups, collection-centre staff, including laboratory technicians, extension workers and other people working in the sector such development workers and project staff".

This is why the EADD milk quality teams in Kenya, Rwanda and Uganda are using the book as a resource to help set up quality assurance systems. These systems must comply with national food safety standards and regulations; and be approved by the concerned national institutions such as the Kenya Dairy Board and Uganda Dairy Development Authority.

A case study

Kabiyet Dairy Company is a case in point. The company is owned by over 3 000 smallholder milk suppliers and still growing. When the company opened for business in August 2009, quality was a key element in obtaining a preferred supplier contract to sell chilled milk to the New Kenya Cooperative Creameries (KCC) processing plant at Eldoret, approximately 50 km away. New KCC currently buys about 25 000 litres of milk daily from the company. Farmers each get an electronically generated daily payslip when they deliver milk to Kabiyet confirming the quantity of milk delivered and the payment.

A Lactoscan AMA has just been procured and an incentive milk payment scheme based on year-round quality and quantity during the low season will soon be introduced. The milk quality grade and appropriate incentive payments, will also be recorded on the daily payslip.



Copies of the FAO Resource Books are available from EADD's office as follows:

- **Kenya Country Office:** tel. +254 053 202 1273/8; email: info@eadairy.org
- **Rwanda Country Office:** tel. +250 252 565 432; email: info@eadairyrwanda.org
- **Uganda Country Office:** tel. +256 0414 233 481; email: eadd.info@eadairyuganda.org

Alternatively PDF copies may be downloaded from the FAO smallholder dairy website *ftp://ftp.fao.org/docrep/fao/012/i0980e/i0980e00.pdf* DMA

EADD **News**

Highlights from Rwanda

by George Mose

Six new chilling plants on board

The EADD Rwanda team selected six additional sites to work with in the current year. A site selection process was undertaken in September 2009, focusing on nine potential sites in the Eastern Province, where approximately 50% of all Rwanda's dairy activities are centered. Site selection was followed by validation and feasibility studies. Four sites from Rwamagana district and two from Gatsibo district, were found to be feasible and selected for EADD operations. The new sites are Muhazi, Musha, Rubona and Dukundamatungo (Kigabiro) in Rwamagana district. The remaining two from Gatsibo district are Ndatemwa and Ngarama.

AI-school for Nyagatare

The EADD breeding team upgraded its artificial insemination (AI) school in Nyagatare, by constructing a modern cattle-handling facility. An additional 45 new AI-technicians were trained to add to the existing 82, and the skills of 26 existing AI business providers were upgraded. The school has a cattle crush valued at more than US$3 000, full demonstration equipment including seven AI-guns, liquid nitrogen tanks, artificial udders, and 17 cows for practical sessions. The school will facilitate animal handling training.

AI-adoption rates hit the roof

So far a total of 15 108 inseminations (5 066 farmers) have been carried out within the project's operational zones. The breeding strategy in Rwanda, which involves synchronisation and timed AI, which is somewhat more expensive compared to AI following natural heat detection, is still a preferred choice. By the end of December 2009, 299 calves had been born out of EADD-procured bull semen. EADD-semen in Rwanda is distributed as one third Jersey, with the remainder being American-Holstein.

Partnership takes effect

Gasi Dairy Cooperative is set to be the first cooperative to benefit from a winning partnership between EADD, the government and the Rwanda Development Bank on chilling plant financing. In this partnership, the dairy cooperatives will benefit from a 20% grant from the government, to aid in purchasing the chilling plant machine. Construction of Gasi is near completion and the chilling plant is set to be commissioned by the end of March 2010.

Building farmer capacities

In the last quarter EADD surpassed the projected annual target farmer training in group dynamics, by 158%. In total 5 174 farmers from ten cooperatives fall into this category. EADD continues to use adult learning techniques of "learning by seeing", and 86 dairy cooperative committee members and staff from ten cooperatives, participated in a study tour to a Tea

Growers' Cooperative in Rulindo district. Participants were given tips on issues such as cooperative leadership, management and business development services (BDS) stimulation.

Gender progress

The number of women in leadership positions, rose threefold in the last quarter, from the projected target of six to 18 women. The number of women also participating in cooperative activities also rose significantly to 4 789.

Highlights from Uganda

by Beatrice Bamulesewa Nabwire

Farmer participation

Farmer participation in EADD activities is increasing, with over 11 800 farmers registered in 16 legally organised dairy farmers' business associations (DFBAs), which are progressively growing in dairy business hubs. Over 2 400 farmers have benefited from local and regional learning trips.

Breeding ahead!

Twenty-three new artificial insemination (AI) technicians were trained in insemination, pregnancy diagnosis, quality systems, record-keeping, traceability, and business aspects of AI. They were also equipped with AI-kits. To date 17 AI satellite centres have been set up and are continuously supported with supplies from EADD. Over 7 700 inseminations have been registered with some 2 000 calves born. Over 6 300 farmers have been sensitised and/or trained in new technologies in animal health, breeding, feeding, milk quality, record-keeping and animal identification. A number of training materials have been developed and printed in the form of posters, brochures, flyers.

Community animal health services

Thirty-three community animal health providers (CAHP) have been trained, with 28 of these having been equipped with veterinary starter kits. These are helping over 11 000 farmers to access animal health services.

Feeding strategies

Farmers have been seriously engaging in dry-season feeding strategies (silage- and hay-making) in preparation for the December-February dry season. The use of pulverisers to increase utilisation and management of crop residues, has aroused a lot of interest among farmers following a learning visit to Kenya and seeing how their counterparts there maximise the use of crop residues. Many farmers are seeking to purchase the pulverisers.

Milk bulking and chilling

Farmers have continued to work together and pull resources to buy shares and raise equity to buy their own chilling plants. In addition to Kiboga West Livestock cooperative, four other cooperatives (Kinyogoga, Masindi, Bbaale and Nsambya) have acquired milk chilling plants. Altogether these are bulking and chilling an average 9 840 litres of milk daily, which is sold to milk processors (Sameer and JESA) and other major milk traders. Three other cooperatives (Maddu,Nabitanga,Luweero) are in the process of procuring their milk chilling plants.

Business development services

So far 180 business development service (BDS) providers have been trained. Business opportunity seminars for BDS providers were conducted in Kiboga, Masaka and Bbaale. Farmer seminars on BDS opportunities were also conducted during farmer field days in Budondo,

Buikwe, Maddu, Nabitanga, Kalungu, Gulama, Kijunjubwa, Luweero and Mityana. A farmer-owned micro-finance associations (SACCO) was established at Bbaale Cooperative Society.

Highlights from Kenya

by Jane Kithuka

BDS training

BDS service providers were trained on marketing, record-keeping and finance, as part of a series of business opportunity seminars. A total of 177 service providers where trained in agro-vet, artificial insemination (AI), animal health and milk transport.

Exchange visits

During the quarter, 1 136 farmers, including 51 board members, participated in exchange visits. Farmers from Lelan, Metkei, Kokiche, Cherobu, Olenguruone, Siongiroi and Kipkaren learnt from Limuru Dairies, Jasho farm, Kabiyet Dairies Company Limited (new EADD chilling plant), and Tanykina Dairy Plant Limited (existing EADD-site). Farmers benefited from topics ranging from feeds and feeding, zero grazing construction, animal health management, feed establishment and conservation. EADD also hosted 65 farmers from Uganda, who visited Baraka farm, New KCC, Tanykina Dairy Plant Limited and Moi University, and to small-scale farmers, Laban Talam and Willy Kirwa.

Field days

Field days were held in Chepkorio during the World Food Day, and in Ziwa in collaboration with New Kenya Cooperative Creameries. Three hundred farmers were trained in production, feeds and milk quality.

ESP accreditation induction

Extension service providers (ESPs) from Kipkelion, Kabiyet, Kipkaren and Metkei were trained on quality issues before being accredited by the Kenya Dairy Board as qualified service providers for their divisions. Participants were trained on topics such as milk quality, business delivery service and BDS scenarios.

Governance and leadership

The board of directors from Chepkorio and Ziwa were engaged in a two-day training session, in a bid in increase their skills and capacity in managing their respective DFBAs.

Launches

SOT Dairy Company Limited was launched on 5 December 2009 by the director of livestock, assisted by area member of parliament and Bill Gates representative, Kristin Grote, Heifer International vice-president for Africa, Dr Sahr Lebbie, Heifer country directors from Kenya, Rwanda and Tanzania, and Uganda's deputy country director, among others.

Commissioning

Kokiche Dairies Company Limited in Cheptalal, was commissioned on 17 December 2009. The area district commissioner presided over the ceremony, which was combined with a field day, where 250 farmers were trained.

A visit by co-chair of Gates Foundation

EADD Kenya was privileged to host Bill Gates, co-chair of the Bill & Melinda Gates Foundation, in early December. Gates visited Kabiyet Dairies Company Limited, one of the first chilling plants to be launched in Kenya, and also the farm of Laban Talam, a model smallholder dairy farmer in the project. DMA

If your milk is of a good quality, with a low bacterial content, it will fetch a good price from the milk buyer (Photograph courtesy of EADD)

The importance of milk quality

by **Susan Atyang, EADD Uganda (Photographs by Augustus Nyerere)**

Milk quality is not related only to milk composition aspects such as protein or fat levels, but rather to the presence of and substances such as antibiotics.

Milk quality is important both to the farmers and dairies that process the milk into products. The quality of the raw milk determines the:

- Storage time of the milk – good quality milk takes longer to deteriorate.
- Range of products that can be produced – high quality milk can be used to process high value products such as UHT milk, ice-cream, yoghurt, etc.
- Good quality milk gives a good taste to processed products.
- Shelf life of the processed products is longer.
- Processing losses at the dairy plant are greatly reduced.

What causes milk spoilage?

Milk is rich in nutrients (proteins, carbohydrates, fats, vitamins and minerals). These nutrients allow bacteria to grow very quickly in milk and cause spoilage. If a farmer or milk handler does not practice good hygiene during milking or milk-handling, milk will go bad.

Though we cannot see the bacteria with our eyes because they are very tiny, we know

that they are present because of their effects. For example, bacteria will cause spoilage when they feed on the nutrients in milk and pass out toxins and acids which cause curdling/spoilage of milk. Bacteria grow faster at high temperatures and at low temperatures, their growth is checked.

Clean milk on the farm

Milk from the teat of a healthy cow, contains very few bacteria. With poor hygiene, more bacteria are introduced. The use of dirty hands and unclean milking and milk storage equipment, increases the number of bacteria tremendously. To keep the number of bacteria low, the farmer should observe hygienic milk production practices and should ensure that milk is cooled to below 5°C as soon as possible, to reduce growth of bacteria.

To ensure that clean milk is produced at the farm level, a farmer should observe the following practices:

- Ensure that cows are healthy and housed in a clean environment. Proper health of the cow is a basic prerequisite for high quality milk production.
- The milking environment should be clean and free from dirt, dung and flies.
- The milker should be free from communicable diseases such as diarrhoea, typhoid, tuberculosis (TB) and should only milk after complete recovery. He should be well groomed with short clean finger nails and should not spit, sneeze or cough during milking. Healthy cows that are milked for the first time should be milked first, followed by the older cows. Cows with mastitis (inflammation of the udder) should be milked last and that milk should be disposed off. For cows with mastitis, the healthy teats should be milked first and the infected ones last. Antibiotics are frequently used to control mastitis in dairy cows. However, the presence of antibiotics has negative effects, e.g. it can affect the processing of fermented products such as yoghurt and cheese. In addition, some people are allergic to some antibiotics, and antibiotics can also lead to resistance to some drugs in humans. Farmers should therefore observe withdrawal periods for drugs administered to cows.
- Proper milking procedures should be followed:

✓ Assemble all the materials required for milking (milking salve, clean towels, bucket, strip cup, soap, warm water, teat dip, restraining rope, disinfectant if available). It is important to note that plastic containers such as jerry cans and plastic buckets are not recommended for milk handling, since they are difficult to clean and bacteria can hide in crevices not visible to the naked eye.

✓ Give dairy meal to the cow before milking, to prepare the cow for milk let-down.

✓ Restrain the cow and wash your hands. Also wash the lower part of the arms with warm water and soap to remove all dirt particles. During milking, avoid having your hands coming into contact with the milk or even touching the inside of utensils and containers.

"If a farmer or milk handler does not practice good hygiene during milking or milk-handling, milk will go bad"

✓ Wash the udder with clean warm water before milking (antiseptic can be applied to water if available) and dry with clean towel. Avoid sharing towels for different cows to prevent disease transfer. Antiseptic use will assist in prevention of disease transfer.

✓ Clip the hair of the udder regularly and perhaps the flank as well. The cows' udders should be free from dirt and manure. Although dirt can be filtered, bacteria in the milk will affect milk quality.

- ✓ Apply milking salve on the teats.
- ✓ Draw first milk from each teat in a strip cup and check for clots, blood and watery milk on a black surface. If present, milk the infected teats last.
- ✓ Milk the cow within 7-10 minutes to take advantage of the milk let-down reflex.
- ✓ Apply teat dip to disinfect the udder and release the cow from milking area. This protects the teat from environmental bacteria which can enter the teat and cause mastitis.
- ✓ Sieve the milk to remove dirt which may have dropped during milking.
- ✓ Transport milk to the cooler as soon as possible (do not exceed two hours).
- ✓ Milking utensils should be immediately washed with soap and warm water, and placed to air-dry in an inverted position. Towels should also be washed with warm water and soap, rinsed with disinfectant and dried. Milking towels can also be boiled if disinfectant is not available. Towels should be renewed regularly (at least once a month).

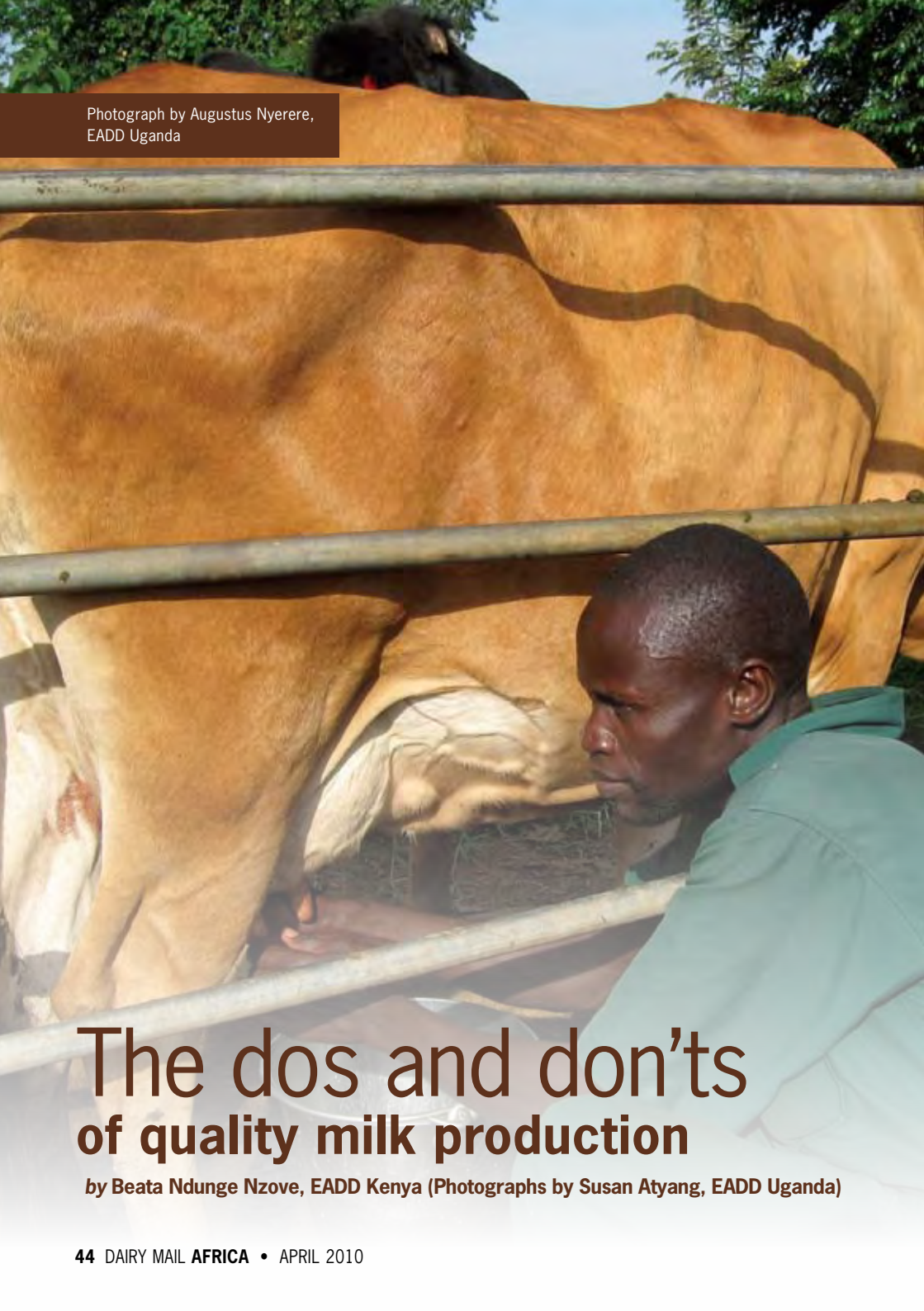
“ Milk quality is important both to the farmers and dairies that process the milk into products ”

- ✓ Store dry utensils in a clean, dust-free and well-ventilated room. Dust should be prevented from entering the can during storage. Do not store utensils in the same room with farm implements and equipment used to dispense toxic chemicals (pesticides, acaricides, and herbicides). When chemical bait for rodents such as rats is placed, milk utensils should be properly covered.
- ✓ The temperature of milk from a cow is approximately 36oC, which is a good temperature for bacterial growth. Milk should therefore be covered and kept in a cool, clean area or be immediately chilled or transported to the cooler or chilling plant to lower the temperature to below 5oC keep bacterial growth in check. Do not take longer than two hours before delivering milk to chilling plant.

A zero-grazing system, where hygiene is definitely not top of the list, and the milk quality will be poor

A clean udder protects the milk from factors which could lead to mastitis and poor quality milk

In as much as production of high quality milk is encouraged, it is important that milk buyers consider paying higher prices for milk with higher protein and butter fat and of good bacteriological quality (less bacteria). This will not only motivate the farmers to produce quality milk, but will also greatly improve the marketing of dairy products. DMA



Photograph by Augustus Nyerere, EADD Uganda

The dos and don'ts
of quality milk production

by **Beata Ndunge Nzove, EADD Kenya (Photographs by Susan Atyang, EADD Uganda)**

A reduction in milk spoilage can be attained by observing hygienic milk production, handling and marketing practices. In 2009 alone, milk spoilage from the existing seven cooling plants situated in the Rift Valley and central provinces in Kenya, amounted to over 180 000 litres, which is equivalent to a loss of US$60 000.

Assessments by the EADD quality team conducted by interviewing individual dairy farmers involved in the project, staff at the cooling plants and farmer trainers, revealed that milk quality is the greatest threat to the industry and that many farmers are grappling with it.

Here then are the dos and don'ts of improving your milk quality standards and reducing the chances of your milk getting spoilt before, during and after milking.

BEFORE MILKING

Before milking, always wash the udder with clean, warm water and wipe dry with a soft clean cloth

The cow

DO check for defects from the udder, injuries, swellings, reddening or any other defects.
DO ensure that the hair around the udder is kept trimmed.
DO always wash the udder with clean, warm water and wipe dry with a soft clean cloth.
DO, if necessary, restrain the hind legs of the cow in a comfortable manner to prevent both the cow and the milk from contamination by urine or cow dung during milking.
DO ensure that feed given to the cow prior to and during milking does not contain unpleasant or sharp smells, such as silage, pineapple husk or garlic.

Before milking, always wash your own hands with soap and clean water

Yourself (the milker)

DO shower regularly and ensure that milking clothes are kept clean.
DO keep your hands clean (by washing with soap and clean water) and dry (using a clean towel) before handling any milking equipment.
DO keep your fingernails short and well trimmed.
DO wear clean protective clothing comprising an overall, boots and well-fitting milking cap.
DON'T wipe your hands on your clothing.
DON'T apply body sprays.

DON'T milk or handle any milking equipment if suffering from an infectious disease, such as tuberculosis (TB).

MILKING EQUIPMENT

DO ensure that you have a clean aluminium container (for washing the udder), a clean aluminium milking bucket, a clean sieve and a clean aluminium milk storage can (for milk transportation to cooling plant).
DON'T use any plastic material as milk handling equipment.
DON'T wash the udder or your hands from the milking bucket.

Note: *Milk handling equipment should be easy to clean by having a wide mouth and no crevices or dents. They should be made of aluminium or stainless steel. Plastic containers are hard to clean and make milk go bad faster.*

Milking parlour

DO Keep your milking parlour free from cow dung or any other smelly substances.
DO keep you milking parlour free from noise or any other disturbances.
DON'T milk the cow in its sleeping or grazing area.

DURING MILKING

Cow

DO, if necessary, apply clean milking salve from its original container.
DON'T place milking salve on any surface such as a wall and use it for milking.
DO make the first draw into a strip cup to check for mastitis.
DO gently squeeze the teats within your fingers.
DON'T pull the teats, as this injures the animal and contributes towards mastitis.
DO ensure that the milking process takes at most eight minutes.
DO ensure you completely empty the udder, as this helps control mastitis.
DON'T suckle the calf at any time during milking, as this dirties the udder.
DO milk cows with mastitis last and discard their milk.

During milking, and if necessary, apply clean milking salve from its original container

Personal hygiene

DO ensure that your hands are clean before milking, and keep them away from your arms, nose, mouth or any other point of contamination while milking.
DON'T sneeze, cough or smoke while milking.

AFTER MILKING

Cow

DO dip the teats into an antiseptic solution (teat dip) after milking.
DO discard milk from cows undergoing treatment if the withdrawal period, as advised by the veterinarian, has not ended.
DON'T mix colostrum (milk obtained from a cow during the first seven days of calving) with the rest of the milk.

Milk

DO pour the milk from the milking bucket through a sieve into the milk storage can, to remove hairs and other unwanted particles.

DO keep the milk covered at all times, to avoid entry of dust and other contaminants.

Transporting milk

DO transport milk in aluminium or stainless steel containers.

DON'T put milk in containers that previously contained chemicals, detergents, lubricants, oils and medicines.

DON'T in case of a loose lid, use a clean and clear plastic sheet to fasten the lid to the container.

DO deliver milk to the cooling plant within a maximum of two hours after milking. This helps to reduce the chances of milk contamination.

DO avoid shaking the milk excessively.

DO protect the milk from direct light and high temperatures to avoid spoilage.

DO clean the milk transport vehicle immediately before delivery and collection.

DON'T transport milk together with other goods.

DO keep the milk covered at all times.

Dip the teats into an antiseptic solution (teat dip) after milking