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Germans assist with Mugabe factory

A German company with a branch in South Africa, has busted the EU targeted measures against president Robert Mugabe and his wife, Grace, by building a state-of-the-art dairy processing plant to process milk from their Gushungo Dairy Estates. The dairy, costing US\$13,5 million, was built by Guth South Africa, a leading supplier of equipment to the local dairy, food and beverage market.

The first family seized Foyle dairy farm in the fertile Mazowe Valley from its rightful owner, Ian Webster. It used to be one of the best dairy estates in the country. Sources at Guth said the equipment would be installed at a big factory at Mugabe's rural home in Zvimba, not on the Gushungo Estates. It is presumed the milk will be trucked across the country from Mazowe to Zvimba. – *zimsituation.com*

Ugandan forces seize cattle

Kenyan Cattle herders who crossed national borders to find green pastures, landed themselves in trouble with the Ugandan government. Instead of grass and water, they found Ugandan forces seizing their cattle and accusing the herders of committing crimes.

Now the families who depend on the cattle for their livelihoods, have to accept international aid in order to have food. The prospects of getting the cattle back is said to be zero. According to reports, up to 3 000 Kenyan herders are currently in Uganda with their animals. The pastoralists say the Uganda government is out to harass them, yet they are innocent. – *Daily Nation*

USADF signs grants

The United States African Development Foundation (USADF) has signed two grants in Washing-

ton DC, to support milk producers in Nigeria. The grants will benefit Kaban Milk Producers Cooperative Society (KMPCS) and Maje Milk Producers Cooperative Society (MMPCS).

KMPCS is a 115-member cooperative, while MMPCS is an 85-member cooperative. Both are located in Kaduna State and their members are nomadic herders who identify themselves as Fulani. All members of KMPCS and MMPCS are involved in the production of milk. USADF started programming in Nigeria in 2001. Nigeria's current portfolio stands at 31 investment projects totalling more than \$5 million. – *Press release*

Zim dairy on verge of collapse

Zimbabwe's national dairy herd is down to just 22 000 cows from 192 000 in 2000. Zimbabwe's dairy industry has declined to the verge of collapse, following a decade of land reform, experts say, with the national dairy herd down to just 22 000 cows from 192 000 in 2000, when supporters of president Robert Mugabe started seizing white-owned farms.

Chairman Wesley Tose Sansole of parliament's committee on industry and commerce, said his panel heard from managers of Dairybord Zimbabwe, that it is being supplied by just 60 dairy farmers compared to 215 providers in 2000. Deliveries have plunged to 38 million litres a year, from 138 million litres of milk ten years ago.

Sansole told VOA Studio 7 reporter, Gibbs Dube, that the industry has suffered because white commercial dairy farms were seized by ZANU-PF militants who failed to maintain milk-production operations. He also said chronic electric power outages are also hurting the dairy industry. – *VOA*

Processor sets up UHT-plant

Githunguri Dairy Farmers Cooperative Society will soon start processing ultra heat treated (UHT) milk. The society is spending Sh150 million on the UHT-plant, chairman Charles Mukora said. It expects the plant to be operational by August this year.

Mukora said the unit would substantially increase profits, with resultant increased producer prices. He said the construction of the premises would cost Sh72 million, while the unit would cost Sh43 million and a packing machine Sh31.6 million. Mukora said a survey by the Kenya Dairy Board showed that there was a ready market for about 400 000 litres of UHT per day. – *Dairy Nation*

Zim bans imports

Zimbabwe has banned the import of animal products from South Africa. The ministry of agriculture said on recently that this was because of the outbreak of Rift Valley fever in parts of South Africa. The ministry said Zimbabwe was working closely with the South African government to implement measures to control the spread of the virus.

Economist, Eric Bloch, told *Eyewitness News* that the ban would not have a major effect on local meat processors. He said the ban would benefit local poultry producers. The Zimbabwe Poultry Association has been lobbying for a three-month ban on frozen chickens from South Africa. Producers said they could not compete with the low price of imported South African chickens and had 1 400 tons of meat that they could not sell. – *Eyewitness News*

Dairy skills exported

Dairy farming expertise from southern Scotland is to help tackle poverty and aid economic growth in Malawi. The Scottish Agricultural College's dairy research centre in Dumfries, is to lead the three-year project. It will involve the collaboration of the nearby Barony College and the Bunda College in the African nation.

Project leader, Dr Mizeck Chagunda, said dairy farming in Malawi was important for both "improved livelihoods" and "better nutrition security". The project, which runs from 2010 to 2013, has been backed by more than £350 000 of Scottish government funding. It will establish a dairy learning resource centre and promote a rural industries diploma programme. – *BBC*


KCC cuts milk prices

The milk crisis in Kenya has deepened further with the reduction of producer prices by between Sh2 and Sh3 per litre, in move that will hurt the earnings of millions of farmers whose output got a lift from the ongoing long rains. Consumers will also pay more for the produce after the milk processor withdrew a discount offer that came in the form of free packets of milk and enlarged packaging from 500 ml to 550 ml.

The new producer pricing structure means farmers are now taking home between Sh14 and Sh17 for every litre, down from Sh22 in February and Sh24 in December. The milk processors reckon that the price changes, which have been brought home by the heavy glut in the milk market, are geared at making the business profitable and sustainable in the long run. – *Business Daily*

Milk shortage looms

Botswana is likely to experience an acute shortage of milk during the coming FIFA World Cup games in South Africa, says Oreeditse Molebatsi. Briefing Chobe farmers in Kasane, the assistant minister of agriculture said the country is producing eight million litres of milk per year, but that the nation requires 48 million litres per year.

Molebatsi noted that the bulk of the shortfall is met through importation, especially from South Africa, which will be hosting the World Cup. He urged Chobe farmers to venture into dairy farming so that the country could be self-sufficient in milk production. He also urged business people and nursing mothers to be ready for any milk crisis that might arise. – *BOPA* 

On the right is Nkuliseni Leonard Mavhugu, manager of the Fort Hare Dairy Trust's farm just outside of Alice in the Eastern Cape



On greener pastures

by Fidelis Zvomuya

The Fort Hare Dairy Trust is flanked by a herd of 800 beautiful, well-kept dairy cows and a magnificent state-of-the-art cow shelter. This project has become a blue chip and the pride of the small university town of Alice in South Africa's Eastern Cape.

With its pristine green fields, this project has become South Africa's celebrated commercial farmer-driven mentorship programme. Several young people in overalls hosing down parlours, treating animals, taking care of the fields or feeding calves, is one of the characteristics of this Garden of Eden, where milk is flowing from the green fields.

Watching the grass grow

It is in this paradise that Nkuliseni Leonard Mavhugu prefers to stay and watch the grass grow. This might seem dull and boring for a youngster, but for Mavhugu this has a significant meaning: "In my view, cows turn grass into milk. The richer and more abundant the grass, the richer and more abundant the milk is going to be. And this is what I like most," he says.

He keeps close track of the content of the grass in his pastures, precisely measuring its protein and sugar content, and producing computer charts that track how much is left to feed his cows through winter.

“A healthy cow always gives you the best milk ever. Feeding them and making sure that your cows are healthy, is the only medicine for a successful dairy production business,” he said.

It starts with the pastures

“We use a combination of high quality pasture, supplemental stored and purchased feedstuffs. Optimising dry matter intake and maintaining normal rumen function, is a priority that we also monitor closely,” he says.

A pasture, Mavhungu explains, is “a complex inter-relationship of plant, temperature, light, soil, organisms, nutrients, water and livestock that make the pasture a continually changing ecosystem.

“Pastures are the foundation of sustainable dairy production. We best maintain ours here by developing a grazing system or plan that

conserves the soil and plant resources, while maximising productivity within the natural limits of the particular ecology of the farm.”

“This,” Mavhungu says, “is where the success of milk production at the farm begins – the pastures.”

This knowledge, which he is now proud to share with anyone in South Africa, is a result of extensive mentorship programme he went through with some of the white commercial farmers who are part of Amadlelo Agri, an empowerment company that manages the Fort Hare Dairy Trust.

The partnership

The trust was initiated from a partnership between 70 white commercial dairy farmers from the Tsitsikamma and Underberg areas through Amadlelo Agri and the University of Fort Hare. It has become a shining symbol of how successful land reform could be through the provision of skills training and resources.

“We met in 2004 and came to the conclusion that land empowerment is not purely the responsibility of the government,” says Amadlelo Agri chief executive, Jeff Every. “If land reform is to take place properly, white farmers have to play a role in providing training and resources. We have had all the privileges. We have to share what we know and what we have.”

The farmers signed on an empowerment company, Vuwa Investments, which was given a 35% stake in Amadlelo. They retained 49% of the shares and the rest was shared among the 600 workers of the 70 dairy farmers.

Solid financial support

“I met the agricultural department of the University of Fort Hare to discuss our plan. The university offered to contribute research and scientific knowledge to the farm and donated R2 million towards the project. It also offered a piece of land outside town, which it owned



At the tender age of 22, Jeanet Nyeleti Rhokhotso proudly manages the Middledrift Dairy Farm



The herd at Middledrift Dairy Farm

through the department of agriculture," Every says.

A further R5 million was received from Amadlelo and two amounts of R7,5 million in equity and R7,5 million credit from the Land Bank, was also obtained.

When Mavhungu arrived at the farm in February 2007, it was bush, full of trees.

"I was not confident that I was going to make it. I started by cutting down trees," he explained. "I owe my success to Amadlelo Agri's two-year farming internship programme. I was deployed to some of South Africa's top pasture and dairy farms. There I learned a lot with regard to practical technical skills, which includes hay production, animal management and husbandry, milking, herd management and the product.

"I must say, it was the hardest I've ever worked for free, but somehow I really didn't

mind. I knew that the knowledge I was gaining, was priceless," he says.

Getting the job done

"Back in the Eastern Cape, I got to work straight away. I chopped out the bushes, dug trenches, laid irrigation pipes, built cattle enclosures, erected fences and learned to service tractors.

"My wife and daughter were with me. They helped too. I was given a few implements to work with and I hired some labourers. It was tough and I learned as I went. You cannot do this job if you don't have a passion for farming," he said.

Mavhungu was in constant consultation with his mentors for advice, and at the beginning of October that same year, Mavhungu was milking cows, turning it into a commercial dairy farm and mentorship institution.



Fort Hare Dairy Trust's calves having a go at nature's food

The 800-cow rotary parlour produces around 10 000 litres of milk a day. A large portion of this milk is supplied to Clover.

“The animals on this farm require 600 tons of maize a year. From the piece of land given to us on lease by Fort Hare University, I produce maize for silage and I source some from farmers in the area,” he says.

Today, cows at the farm cost less to feed and yield more milk solids, making them more profitable. The Fort Hare Dairy Trust is already economically viable. And if that isn't enough, its success has seen the birth of three other projects, Middeldrift Dairy Farm, the Keiskamma Irrigation Scheme and the Ncera Macadamia Project.

Middeldrift magic

One of the first student graduates from the trust, 22-year-old Jeanet Nyeleti Rhokhotso, is now managing Middeldrift, which began operating in November 2008. This project was funded through a R9,9 million grant from the National Empowerment Fund and a further R8,2 million provided by Amadlelo Agri.

Middeldrift has already transformed itself into a full-fledged commercial dairy farm. The Gwebindla Trust, which is made up of 65 families from the Middeldrift community, provided the 280 hectares.

“We have 600 cows on this farm and our current production is 1,2 million litres of milk per year. Our target is to produce more than 3,8 million litres,” says Rhokhotso.

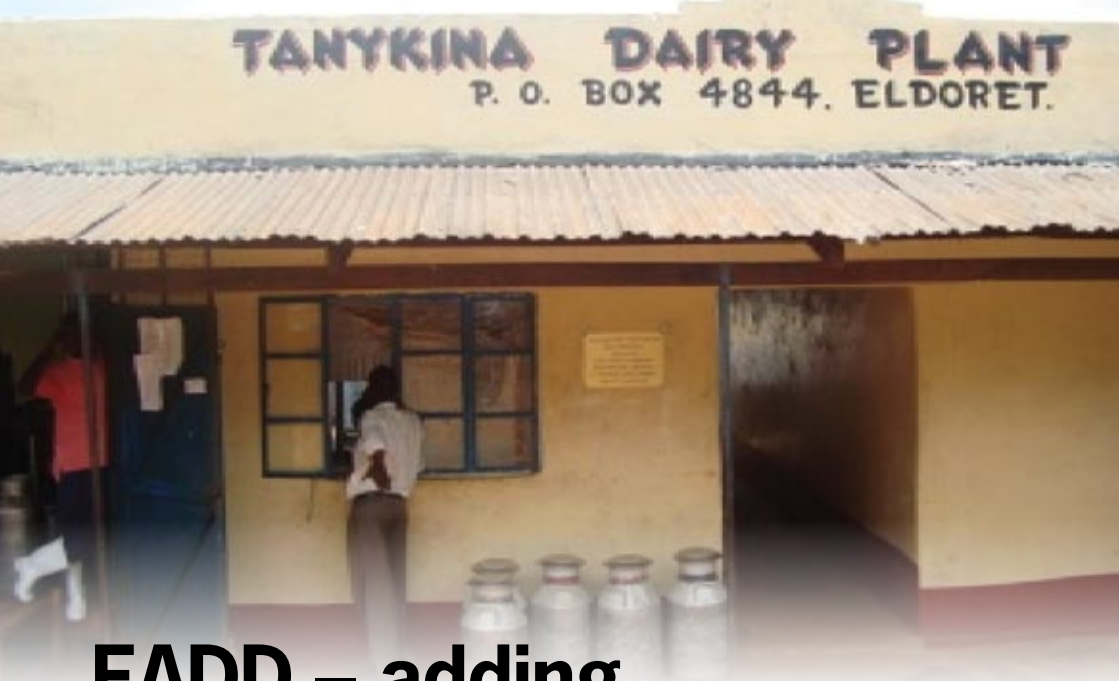
The project is meant to redress some of the imbalances created by the land redistribution programme. So far 16 permanent workers from the community are employed at the farm and the milk they produce, goes to Clover.

Middeldrift Dairy was officially opened on 5 March this year by rural development and land reform minister, Gugile Nkwinti, who described the empowerment partnership as having played an important role in de-racialising the rural economy and nurturing cross-racial unity.

The work doesn't stop

“It's never been easy,” says Rhokhotso. “We are up at 4:30 for the first milking and we only finish up at around eight in the evening. If it wasn't for the training I received at the Fort Hare Dairy Trust, I probably wouldn't have been able to cope.”

The Keiskamma Irrigation Scheme is attempting to resuscitate 600 ha of farmland, and to eventually assist in milking 2 000 cows. The Ncera Macadamia Project aims to be a 300 ha farm, which will have significant employment capacity. **DMA**



EADD – adding value to milk

by Kenneth Matonya, Business Advisor, EADD

The East Africa Dairy Development (EADD) project is one of the development projects supporting smallholder farmers in the rural central and western parts of Kenya (Kieni, Olkalou, South Rift and North Rift). These happen to be the key milk producing areas of the country. It is also where milk production per cow averages 3 litres per day.

Although this is sufficient for domestic household consumption, a lot more is required for the local market. EADD has empowered Dairy Farmer Business Associations (DFBA)

to develop innovative ways of increasing milk production and delivery at minimal cost and spoilage to the chilling plants (CP).

The current mode of milk delivery to the CP-sites include the use of hired private vehicles, public service vehicles (*matatus*), bicycles, carts, donkeys and on foot for farmers close to the chilling plant.

Milk marketing

Before EADD's entry, farmers in many sites e.g. Lelan and the larger North Rift region, were unable to profitably price their dairy products. Since the price charged on milk

ought to reflect the value of benefits a customer derives from purchasing it, EADD had to develop a price marketing strategy to support this initiative.

Through facilitated negotiations between the DFBA and the processors, the average current price of milk per litre is US\$0,27. Although the dairy subsector has witnessed price fluctuations over the last six months on a downward trend (from US\$0,36 to current US\$0,27), it is imperative to note that a good pricing system should consider at least the cost of production, competitors' prices and customers' perception.

EADD is currently working with dairy farmers of Central Kenya and Rift Valley. These are areas with relatively moderate to high rainfall. In West Pokot (Lelan), for example, the road conditions are very poor and incidents of breakdowns of milk collection vehicles, tend to increase during the rainy season. During this time, route coverage for milk collection tends to be very low, implying that not all the milk intended for sale can be collected from the farms.

At other times, the milk collection vehicles take too long, e.g. eight hours to reach the CP in the case of Lelan. In such instances, milk may fail the quality test when delivered to the CP, and is rejected. In the event that the milk had been accepted at the CP, it represents a direct loss to the plant. In case of rejection at the collection point, as is often the case, the milk is returned to the farmer.

Most DFBA are currently selling their milk to both New Kenya Cooperative Creameries and Brookside Limited, the leading milk processors in Kenya. Since most of their operations are near Nairobi, they are compelled to source their raw milk from more distant places such as Eldoret, West Pokot and Bomet, as the immediate milk shed area is increasingly being dominated by milk vendors.

In rural areas, milk vendors also take ad-



A milk processing plant at Kitale

vantage of smallholder farmers not collectively marketing their milk, on price and measure. This has negatively impacted on farmers' income realised from the sale of milk.

Milk processing

There are currently over 45 registered milk processors in Kenya. EADD has successfully facilitated the negotiation of milk buyer contracts between the DFBA and two key processors, Brookside and New KCC, to purchase all their chilled milk at some "agreed" market prices.

However, during the dry season, most processors are faced with increased competition from milk vendors, cooperatives and hawkers who divert milk to the informal channel. This has denied the processors both the raw milk and the market for their finished milk products such as yoghurt, cheese and long-life milk in a wide range of flavours and fresh packaged milk.

In towns close to where EADD is currently supporting farmer owned CPs, there are milk bars selling fresh raw milk to hotels and consumers. Milk bars in rural towns of West Pokot, Bomet, Kericho and Eldoret are operated in premises that have few utilities such as water and electricity, hence posing serious health hazards to consumers.

Conversely in urban centres of the same towns, milk bars often conduct some tests on the raw milk to ascertain quality before accepting it. This includes organoleptic (sight



Cheese processing at Baraka farm, Eldoret

and smell) tests, "clot-on-boiling" tests and the use of lactometers to test for adulteration. They also operate in or near the middle to low income residential areas such as Langas, Kapsoya, Elgon View in Eldoret and Brooke, Kericho town centre in Kericho. In Nairobi, for example, most milk bars are to be found in Kibera, Kayole, Githurai, Kawangware and Kariobangi.

With recent developments in the traditional informal milk marketing chains, EADD will in future need to work closely with the Kenya Dairy Board (KDB) to increase the quality of milk being sold in milk bars. However, this initiative may not be immediately successful, because the increased cost of pasteurised milk does not match consumer demand.

Milk value addition

Facilitation, identification and validation of new market opportunities leading to product development and the launch of new products, is a key milestone of EADD. The aim is to em-

power business enterprises involved in value addition as the only way to drive households out of poverty.

In one EADD feasibility study done in Siongiroi (Bomet district), the economic recess and lack of employment opportunities have witnessed the active participation of the youth in the dairy sector, as a means of earning income for their families.

Although the majority of the dairy enterprises sell raw milk which fetch low prices, one way EADD is supporting these service providers is facilitating them with training and identifying sustainable linkages e.g. using additives to change milk form, colour, taste and other such methods to increase its shelf life.

Less waste

Other areas of training include capturing the market at the right time by bulking and transporting milk to the chilling plant where it can earn more income. Value addition therefore minimises wastage, reduces cost and im-



Milk collection from the chilling plant

proves quality of milk which realises better prices and increases farmers' purchasing power.

EADD's current experience with small-scale milk processors such as Moisbridge Dairies, Donyo Lessos and Baraka Dairies, and many others, indicates that using low level technologies will prevent their products from competing effectively with products from large-scale processors. Furthermore, small-scale processors are finding it difficult to get the right kind of equipment for their businesses.

Other challenges include difficulty in accessing credit facilities due to high interest rates, lack of collateral, problems of accessing appropriate value addition information due to lack of knowledge on sources of information and lack of time to look for this information.

If more income is to be generated from value addition, it is imperative that small-scale enterprises be facilitated to acquire credit, appropriate training in value addition and marketing skills. This will make value addition opportunities appropriate, relevant, accessible and affordable

Conclusion

The government and other stakeholders including EADD should continue supporting the implementation of policies and programmes that increase dairy productivity and incomes. The smallholder dairy farmers who are the key stakeholders of the subsector need to be recognised. It is the most appropriate way for them to express their specific dairy needs and challenges. In this regard, EADD will continue building the capacity of smallholder farmers to make informed decisions on issues that relate to value addition and income generation ^{DMA}

Nichrome – leading the way

Nichrome India Ltd is a leader in milk packaging solutions with its Filpack CMD machine. Nichrome is the market leader in Kenya, with over 75 machines running successfully.

Nichrome has developed the fully mechanical Filpack CMD pouch packing machine, which does not require any compressed air. This results in a saving of 15 HP electricity per double head machine compared to other brands. The continuous feeding system with its special adaptor nozzle, results in an accuracy level of ± 3 ml. The mechanical horizontal sealing system results in reduction on seal leakages to below 0,1%. The machine can handle 3-layer as well as 5-layer film.

Mini dairy plant

Nichrome also offers mini dairy plants from 5 000 l/day expandable to 10 000 l/day, in a bid to encourage milk collection centres to start processing and packaging milk for local distribution. Nichrome presented the complete mini dairy plant schemes at the recent ESADA dairy conference. The plant is engineered to produce different milk products. Nichrome also offers training and production support. One plant is already successfully running at Palm Side Dairy in Thika, Kenya.

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A concise "dictionary" of dairy terms (Part 3)

In previous editions we looked at dairy terms relating breeding, genetic improvement, feed and nutrition. In this edition we look at terms relating to rearing and herd health.

Dairy calf and heifer rearing

Calf wastage: The proportion of pregnancies resulting in a live calf at birth and the number of these which survive to first calving. In most cases, mortality up to six months is 15%. Of these, 90% die from scours. Calf wastage has a bearing on the profitability of the dairy enterprise.

Colostrum: The first milk produced by a cow after parturition. It is rich in antibodies and is a source of protection of the calf until it can produce its own antibodies. Colostrum has a laxative effect and prevents constipation in the calf. Calves should be given colostrum within six hours after birth. Without colostrum, the animal is likely to die.

Heat / oestrus: Is the physiological state in which a cow will stand to be mounted. The cow should show signs of oestrus on average 21 days.

Pregnancy diagnosis (PD): It is natural to assume that a cow is pregnant if she does not return to heat within a reasonable period of time after breeding. PD is the reliable measure of conception. Many skilled veterinarians can detect pregnancy by rectal examination, starting approximately 35 days after insemination. This is a delicate process and is best performed by a skilled individual.

Scours: A disease caused by bacteria spread through use of contaminated utensils. Scours cause dehydration of the body, together with loss of weight and loss of essential body salts. **Predisposing factors to scours**

in calves are: (a) Improperly administered milk and water; (b) Solid feed that is not formulated according to the needs of the animal; (c) Hygienic factors e.g. wet floors. **Prevention of calf scours:** (1) The calf should get enough colostrum after birth; (2) Vitamin supplementation (A, D, E – oral or injectable); (3) Avoid over-feeding and irregularity of feeding; (4) Hygiene; (5) Avoid over-crowding. (6) Provide adequate ventilation; (7) Dry bedding; (8) Use of electrolytes.

Supernumeraries: Extra teats. Some calves are born with extra teats and it is wise to remove them before the calf is a month old. While these teats do not usually produce milk, some of them do produce a few drops. These teats usually harbour mastitis organisms which spread to healthy quarters. Before removal, disinfect the teats and cut with sterilised scissors. Bleeding stops with pressure and iodine application. Also apply an insect repellent against screw worms.

Weaning: Separation of the calf from the parent. For dairy cattle, calf weaning takes place within two months and for beef, within five months. Weaning should only be done when the calf is healthy and consuming the recommended feed. There may be a need to postpone weaning if the calf has had scours and pneumonia.

Herd health

Biosecurity: Practices aimed at keeping disease at bay. Examples would be to only buy animals of known disease status and control their introduction onto the dairy farm; ensuring that

cattle transport on and off the farm does not introduce disease; secure boundaries / fencing; limiting access of people and wildlife to the dairy farm; a vermin control programme and use of clean equipment from a known source.

Disease: A deviation from the normal condition of an animal, caused by a living organism.


Herd inspection: Examining the herd for any signs of abnormalities. This could include swellings, abscesses, injuries, etc.

Notifiable disease: These are diseases which must be reported as soon as possible to responsible authorities, once suspected. It is an offence by law not to report such diseases. They cause significant economic losses. An example is foot and mouth disease (FMD). FMD is a highly contagious disease caused by a virus that affect all cloven-hoofed animal, (cattle, pigs, sheep, goats and many wild animals such as buffalo, impala, warthogs, etc).

Control: (1) Avoid contact between cattle and buffalo by erecting game fences around wildlife areas and keeping these fences intact. (2) Vaccination of all cattle in areas adjacent to game parks. (3) Prohibit movement of cattle.

Quarantine: Restriction of the movement of animals to a certain designated area stipulated by the veterinary authorities.

Treatment: Dealing with the cause of disease and helping the animal's body to combat it. The following are important in the treatment and care of animals: (1) Maintaining good hygiene levels; (2) Quarantine; (3) Preventing the spread of infection by burning and burying carcasses, and disinfecting of buildings and pens where practical. (4) Rotation of grazing land.

Zoonoses: Diseases transmissible to humans from animals. They are avoided through appropriate management practices and prevention of contamination of milk according to the GAP. An example is brucellosis. 

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No long shadows here!

A United Nations report that blames agriculture and livestock production for 18% of the world's greenhouse gas emissions, is to be reconsidered amid claims that the figure has been exaggerated and the actual level may be closer to 3%.

This has resulted in dairy cows being considered as **not** the environmental villains they are often portrayed to be, according to a comprehensive UN study into dairy emissions. A new report from the UN's Food and Agriculture Organisation (FAO), has found that cows are responsible for only 2,7% of global greenhouse gas emissions.

Previous claims

The figure increases to 4% if emissions related to meat produced from dairy animals, are included. The report titled *Greenhouse gas emissions from the dairy sector*, was commissioned in response to calls from the dairy sector for more information after the publication of the FAO's controversial *Livestock's Long Shadow Report* in 2006.

“ The study covers the entire dairy food chain, including the production and transport of inputs ”

The 2006 report claimed that 18% of all greenhouse emissions were caused by the livestock sector, a figure used widely by en-

vironmental campaigners, but disputed by the livestock industry.

The dairy sector emitted 1,969 billion tons of carbon dioxide (CO₂) equivalent in 2007, of which 1,328 billion tons were due to dairy production and 151 million tons to meat from culled dairy animals, the FAO said.

Global milk production, processing and transportation accounted for 2,7% of the world's manmade greenhouse gas (GHG) emissions, the FAO said. The dairy sector could boost biogas output to cut the emission of methane, which accounts for about 52% of GHG emissions the sector produces, and carbon emissions could be captured if grassland management were improved.

Cutting emissions

Recommendations on how to cut GHG emissions from the dairy sector will come at a later stage, when the programme of biophysical and economic analysis of mitigation options is completed, the Rome-based agency said.

The new report, covering production systems from nomadic herds to intensified dairy operations, was posted on FAO's website, www.fao.org.

Jim Begg, Dairy UK director-general, said the latest study shed light on the true impact

of dairy farming on the environment: “In producing, dairy cows, milk tankers and dairies emit less than 2,7% of the world’s greenhouse gases.

“Of course we’re still working to lower that figure, but the report shows that the industry’s critics are the ones really producing hot air.”

The study covers the entire dairy food chain, including the production and transport of inputs used for dairy farming, on-farm emissions and emissions associated with milk processing and packaging, as well as the transportation of milk products to retailers.

Reducing the impact

“This report is fundamental to understand and identify opportunities for reducing the environmental impact of the dairy sector, while providing safe and nutritious foodstuffs,” said Samuel Jutzi from the FAO.

The assessment is part of an ongoing programme to analyse and recommend options for climate change mitigation. Emissions from

buffalo, poultry, small ruminants and pigs will form the basis of the next FAO-study. A final report will be published in 2011.

“Of course we’re still working to lower that figure, but the report shows that the industry’s critics are the ones really producing hot air”

The global average of GHG emissions per kg of milk and related milk products is estimated at 2,4 kg CO₂ equivalent.

In the landmark 2006 report, the FAO found that 18% of all greenhouse emissions were caused by the livestock sector, using an aggregate life-cycle approach. The final report on livestock GHG emissions will use the same approach, but with updated data and providing a breakdown into different production systems, as well as indicating solutions for policy-makers, producers and processors. – UN News Service and FAO DMA

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Market your milk in a group

by Elizabeth Nderitu, business advisor, EADD Uganda

The early part of 2009 saw an increase in milk volumes at farm level across East Africa. In most cases, however, this was not matched with an equivalent increase in revenue from milk, as farmgate prices came tumbling down in most places. Some regions experienced reductions in farmgate milk prices, close to a third of their previous highs during the dry season.

In Nyeri in Kenya, some farmers faced a risk of defaulting on the bank loans they had taken during the dry season to improve their milking herds.

Milk processors in Kenya were exceeding their capacities and initiated promotional sales, where customers would buy one packet of milk and get the other for free.

Power in groups

The most effective way for farmers to increase their income from milk, is through marketing as groups, in the form of co-operatives. A co-operative has the advantage of being in a better position to employ group dynamics in bargaining for better prices. In addition, they are able to command higher volumes and sell to large-scale traders as opposed to farmers who sell individually to consumers.

To get to an advantageous position in milk marketing, farmers need to form well coordinated, professionally managed producer groups. EADD has assisted farmers to set up dairy farmer business associations (DF-BAs). Training in co-operative management is key to ensuring that the group is run professionally. In most cases, farmers pay a small membership fee but in other cases, farmers also make a monthly contribution based on any services they may be receiving as part of the cooperative.

Farmers also need to develop well coordinated milk collection points for all their members. This enables them to market their milk as a group, even where there are no chilling facilities available. Chilling the milk at collection points is the most effective way of

ensuring that the milk maintains the quality that meets processor standards.

Market links

EADD is linking small-scale farmers with large processors and ensuring that the farmers sign binding contracts with the processor to buy milk in bulk from them. In Uganda, EADD has linked dairy farmer business with Sameer Agriculture and Livestock Company Ltd (SALL), the processors with the largest capacity in Uganda, as well as JESA processing plant. On their part, the dairy farmer businesses have to meet the quality and sometimes quantities demanded of them by the milk buyers, to ensure sustainability.

Where the farmer groups are large enough to feasibly process their own products, they need to aggressively market them through formal and informal channels to make sure that their brand is well-recognised and the preferred choice of consumers.

Most farmers sell raw milk to traders, processors and consumers, fetching the lowest prices in the entire value chain. To address this, farmers may seek to add value. The most basic aspect of value addition is milk cooling. Farmers get together in co-operatives, bulk and cool milk, which is then sold directly to processors and large-scale traders.

In Uganda, EADD has assisted the Kinyogoga Farmers Cooperative Society to install a 5 000 litre cooling plant. The cooperative is selling milk directly to SALL, the processors with the largest capacity in Uganda. Previously selling milk at 250 Uganda shillings per litre at the farmgate, they now fetch between 370 and 400 Uganda shillings at the farmgate, and 450 Uganda shillings at the chilling plant from Sameer.

(Cont. on p35)

Competing in East Africa

by Isabelle Baltenweck, Agricultural Economist International Livestock Research Institute, Nairobi

Small-scale farms dominate dairy production in most developing countries, including East Africa. Smallholders (defined as households keeping fewer than six milking animals) represent between 60-90% of dairy farmers in East Africa. However, only about half sell milk regularly.

Research has shown that demand for livestock products, including milk and dairy products, is increasing dramatically in developing countries. This "livestock revolution" is explained by increasing populations, rising income levels and urbanisation. Predictions also suggest that to meet this demand, deficit countries will generally import feed rather than livestock products, meaning that an increase in production will occur mostly where increase in demand occurs.

As a consequence, developing countries will produce 52% of global milk in 2020, up from 32% in 1993. This presents huge opportunities for milk producers in developing countries, but only if they can compete on international markets, otherwise local demand will be met by imports.

Profile of a smallholder farm

Most smallholder farms are mixed farms that keep livestock and grow crops. Manure from the livestock is used to maintain (or improve) soil fertility. Crop residues are fed to the livestock.

Home consumption of milk and home-processed products such as ghee, constitute an important source of nutrients. Manure may equal up to 30% the value of milk produced. Livestock are used as insurance in case of emergency and to finance expenses such as education costs.

Estimates are that 80-90% of the total milk marketed in East Africa, is sold into traditional markets (directly to consumers). This percentage is typically higher in poorer countries where disposable income is low, showing the role of demand in determining market share between traditional and processed dairy products.

Cost of production

Data on the cost of milk production were obtained through a random sample of households in areas where EADD operates. A total of 13 sites were surveyed: Five in Kenya (Kabiyet, Metkei, Siongiroi, Soy and Kaptumo), three in Rwanda (Bwisanga, Kabarore and Mbare) and five in Uganda (Bbaale, Luwero, Masaka, Mukono and Kakooge). Results show that producing 1 litre of milk costs US\$0,08 in Kenya, US\$0,13 in Rwanda and US\$0,16 in Uganda.

Costs per litre are higher in Uganda, because total milk production is lower than in the other countries. For comparison, costs of milk production cited by the International Farm Comparison Network show that cost of milk production ranges from \$0,14 to \$0,60 across the world, with a weighted average of \$0,28. Africa has the lowest costs and Western Europe the highest.

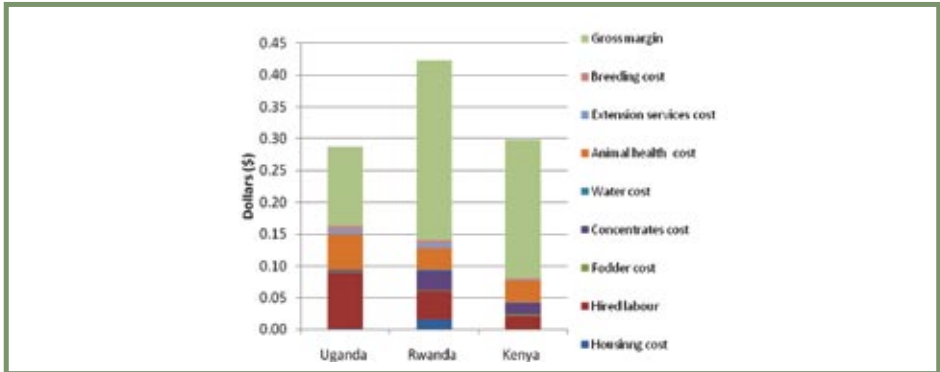
Labour constitutes the largest cost of production in Uganda and Rwanda, while animal health cost takes the largest share in Kenya, suggesting opportunities where interventions could decrease overall costs and therefore increase profitability.

Sale prices (prices at which farmers sell their milk) were also recorded, allowing us to

derive gross margins, defined as the difference between sale price and costs of production as illustrated in *Figure 1*. The figure also provides a

breakdown of the various costs. Data show that gross margins are the highest in Rwanda and lowest in Uganda.

FIGURE 1: Gross margin and cost of production per litre of milk produced in Uganda, Rwanda and Kenya



Data presented here has confirmed that smallholder dairy producers in East Africa can effectively compete. This can further be enhanced by improving economies of scale (e.g. through collective action), facilitating access to services and appro-

priate technologies, improving infrastructure, and creating an overall enabling policy and institutional environment for all participants in the sector.

(References available from the author.) DMA

(Cont. from p33)

More is better

In some instances, farmer groups have the milk quantities that make it feasible to process and market dairy products instead of raw or chilled milk. Take Githunguri Dairy Cooperative in Kenya, for instance.

Formed in 1961 with a membership of only 31 farmers, the cooperative currently has a membership of 17 000 farmers, and collects and processes 150 000 litres of milk per day. They have gone beyond cooling milk and selling it to the processors. They have a well rec-

ognised brand, Fresha, with a product range that includes pasteurised milk, yoghurt, butter ghee and milk cream.

Processors are coming up with solutions to milk excesses during the rainy season. Brookside in Kenya is reported to be planning the construction of a milk powder plant in the next two years. It also plans to increase the volumes of its long-life milk, which has a longer shelf life. Both measures have the potential of alleviating glut and creating reserves for consumers through-out the year. DMA

TABLE 1: Price comparison at various stages in Ugandan milk value chain

Farmgate (raw, unchilled milk) Price/litre	Chilled milk (CP) Price/litre from processor	Pasteurised Milk price/litre	Skimmed Milk Price/litre	Yoghurt Price/litre
300	400	1 500	1 600	2 000



East Africa Dairy Development

In partnership with



Highlights from Rwanda by George Mose

Dairy conference held in Kigali

EADD participated in the 6th Annual African dairy conference and exhibition held from 19-21 May 2010 at the Serena Hotel in Kigali. EADD facilitated a number of farmers to attend the farmer forum day on 18 May and also exhibited its activities to the delegates and members of the public who attended the conference.

Successful gender awareness workshop

EADD Rwanda staff attended a week-long gender awareness workshop between 15 and 19 March 2010 at Rwamagana. The workshop was also attended by some of the regional staff. The team now has a better appreciation and understanding of gender issues than before, and will be integrating gender in all their deliverables in coming days.

More women in leadership positions

In the recent election of new officials to manage Kirebe, Gasi and Mudacos dairy co-operatives, more women were elected to serve in leadership positions.

The elevation of the women into leadership positions will infuse new ideas from women on how they want the co-operatives to be managed. EADD staff who have recently undergone gender awareness training, will support the co-operatives' initiatives to be more gender sensi-

tive. EADD will also work to enhance their management skills.

Women leaders targeted in mobilisation

The EADD Rwanda team organised a women leaders' workshop to drum up support from local women to join dairy co-operatives. The two-day workshops held in each of the three districts where EADD is currently operating, drew support from local authorities, including mayors of the three districts who supported the initiative.

Steering committee meets in Rwanda

EADD's steering committee was hosted by the EADD Rwanda team while attending their routine semi-annual review meetings in Rwanda. The meeting took place at Kibuye between 29 April and 1 May 2010. At the end of the two-day meeting the members of the Steering Committee had a chance to visit some of the farmers of EADD supported dairy farmers business associations (DFBAs), Rubona and DUFACO. The committee also got a chance to meet all EADD Rwanda staff in a meeting held at Dereva, Rwamagana.

Training in Rwamagana

Management and staff of all the new DFBA sites supported by EADD in Rwamagana and Gastibo completed a one-day training session on record-keeping and management. The training that took place at Dereva Hotel in Rwamagana, was attended by over 30 participants.



Highlights from Kenya

by Jane Kithuka

Building board capacity

Business management training was offered to six board members from Lelan Highland Dairies Limited, Siongiroi Dairy Plant Limited, Tanykina Dairy Plant Limited, Kipkelion Dairy Plant Limited, SOT Dairy Company Limited and Kokiche Dairies Company Limited. This was done towards increasing market access to smallholder farmers.

Visit by Heifer COO

EADD Kenya was privileged to host Steve Denne, the Heifer International Chief Operating Officer, who was taken to two chilling plants; Kabiye Dairies Company Limited and Kipkaren Dairy Plant Limited, along with visits to model farmers.

Exchange visits

During the quarter, farmers and board members participated in 38 domestic trips and one regional trip respectively. Forty-four board members benefited from regional learning trips to Uganda and Rwanda project sites. A total of 1 046 dairy farmers from different project sites benefitted from domestic learning tours.

BDS Training

Within the quarter, 61 business development service providers were mobilised and trained from Metkei, Kieni and Ol Kalou. Furthermore, the BDS providers had opportunity to build capacity in marketing, customer care, record-keeping and quality management. In addition, two business opportunity seminars were held for BDS providers in Lelan and Metkei.

Farmer and site mobilisation

Over the quarter, 6 625 farmers were mobilised

and registered. This raised the cumulative figure to 65 186 farmers mobilised so far. Four sites achieved minimum requirement for engagement.

Fastest mobilisation rate

Taragoon Dairies Company Limited was the fastest site in EADD in terms of meeting the minimum requirement in Kipkabus. Within six months, the DFBA had met the 10% mobilisation share equity and 2 000 dairy farmers registered.

Dairy cows identified

The first quarter saw 6 558 cows registered, raising the numbers to a cumulative figure of 20 709 of which 12 381 have been tagged and entered into the database.

Highest milk collection sites

Two DFBA's located in Nandi North district recorded the highest number of daily milk intake. Kabiye Dairies Company Limited and Kipkaren Dairy Plant Limited recorded a daily milk record of 35 000 and 39 000 respectively.

Women dairy management groups

Two dairy management groups were formed comprising of women only in Ol Kalou Dairy Plant Limited. Mallan and Stage 5B each comprises of 15 members. So far members have received training on calf-rearing, deworming, feed establishment and have also benefitted from exchange visits.

EADD engagement with IOM

EADD Kenya is working with the International Organisation for Migration (IOM) in a new site located in Cherangany. IOM is to acquire a milk chilling tank of 10 000-litre capacity and EADD is to provide the farmers with training. Currently, 1 969 farmers have been registered and are presently selling 13 000 litres of milk daily.

Farmer mobilisation

A total of 6 344 new farmers were mobilised in 19 sites. Kiboga cluster registered the highest number of farmers (2 793), while Masaka registered 1 922, Masindi 982 and Mukono 647. Cumulatively 18 175 farmers have so far been registered and organised in 228 DIGs.



Highlights from Uganda by Brain Kawuma

Farmer learning events

Two learning visits were organised for farmers in Masaka Traditional Model Hub (TM) in which 70 farmers participated. Farmers were exposed to different production techniques. Twenty-nine farmers from Kirinya Women Group participated in a learning event in Arusha, Tanzania. In May, 20 farmers from Uganda participated in a farmer's forum in Kigali, Rwanda.

Field days

Five field days were conducted and benefited over 950 farmers. Centenary Bank and Kasawo Namuganga Sacco participated. Farmers were trained on improved feeding technologies.

Gender

A gender training needs assessment was conducted for EADD staff followed by a gender capacity building training. Gender action plans were drawn and the team is currently gender aware and thus transferring the knowledge to communities. Currently gender is being mainstreamed in all EADD Uganda activities.

Animal health services

Eighty-five model farmers have been identified for model farmer development to enhance the uptake of improved animal husbandry practices. An annual review meeting for community animal health providers and trainer of trainers, was conducted and 47 ToTs participated.

Annual review meeting for community animal health providers and trainer of trainers, was conducted and 47 ToTs participated.

Breeding services

Twenty-eight AI-technicians were trained in breeding. Twelve of these were trained in Nairobi Kenya and 16 in Entebbe, Uganda, courtesy of EADD and NAGRIC. The graduates are currently doing there internship and upon finishing, will be awarded qualification certificates. A total of 1 841 farmers were trained in basic animal records, 928 are adopting animal passport and traceability with 2 771 cows ear-tagged within the quarter. Milk quality training started late in the mid quarter with 1 744 farmers trained.


High-value feeds

Three training sessions in high value feeds were conducted during the field days in Kasawo, Kitananda and Lugusulu. A total of ten pulverisers were delivered to groups. To date, 372 farmers are using the pulverisers on a rotation basis.

Fodder demonstration

A total of 119 pasture demonstration plots were established, 30 of which were in the agro-pastoral areas of Maddu, Kinyogoga and Nsambya CP sites. In the TM-hubs, a total of 89 demonstrations plots were established with Napier, lablab, mucunna and calliandra as the major species grown. Two field days were conducted in Kasawo and Bukomero, with 112 and 250 farmers participating from the respective sites.

Marketing and business

A total of 554 412 litres were bulked at five EADD-supported CPs in the last quarter generating an income of 131 713 US dollars. Four business opportunity seminars were held in Butagaya, Kiboga, BUBUSI and Mukono. 

Important processing processes

Pasteurisation

Raw milk often contains pathogenic micro-organisms (germs that make a person sick). It can also have micro-organisms that can spoil the milk. It is therefore very important that milk is pasteurised. Pasteurisation is a heat treatment that kills germs and reduces the number of micro-organisms that can make milk sour or rotten. Pasteurisation can take place at a low temperature for a long time (at 62°C for 30 minutes) or at a high temperature for a short time (at 72°C for 15 seconds).

Pasteurisation process

- The pasteuriser must be sanitised before use. Use water from the balance tank.
- Steam is opened and hot water (above 85°C) is circulated through the pasteuriser for more than 20 minutes.
- Cold water valves are opened so that the equipment can be cooled to operating temperature.
- The water is replaced with milk.
- The milk is heated to pasteurisation temperature (for the specified time).
- The milk is cooled to storage temperature.

Fat separation

Cream contains about 40% milk fat (butterfat). Cream is separated from milk in a separator. The purpose is to remove some or all of the fat and sludge, and standardise the fat in milk.

Fat separation process

- Hot milk is pumped from the pasteuriser into the bowl of the separator.
- The cream and the skimmed milk leave the separator at the top.
- Removal of the sludge is called clarification.

Homogenisation

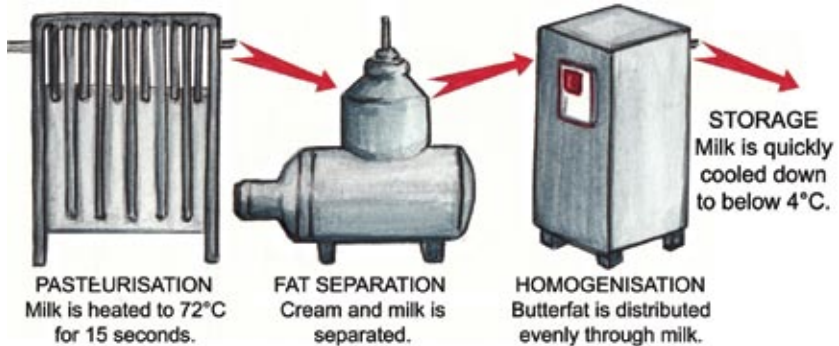
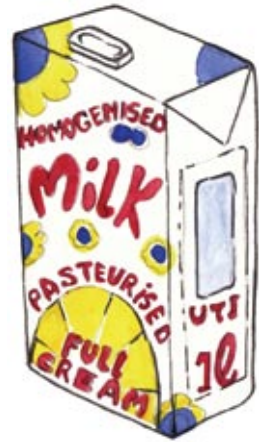
The fat in milk is in the form of big and small droplets that float in the liquid. The fat droplets rise to the surface and form a cream layer. Bigger droplets rise faster. Milk is homogenised to prevent a layer of cream from forming on top of the milk.

Homogenisation process

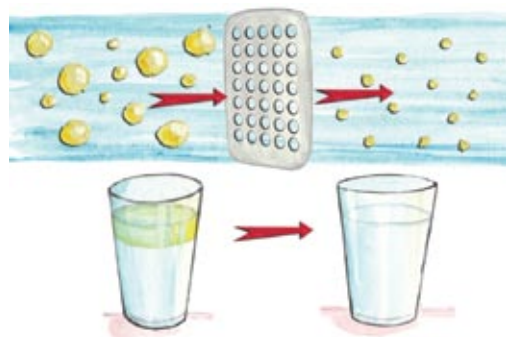
- Milk is pumped through small openings at high pressure.
- Fat droplets are broken up into smaller droplets, which are more or less the same small size and float evenly throughout the milk.

Raw milk is processed to give it a better shelf-life and comply with specific standards.

- **Pasteurisation:** Milk is heated to a specific temperature and cooled down quickly to kill any germs.
- **Fat separation:** Cream is separated from milk to remove some of the fat and standardise the fat content in milk.



- **Homogenisation:** Milk is homogenised to prevent a layer of cream from forming on the milk.



Homogenisation