Vom Journal of Veterinary Science Vol. 9, 2012: 32 - 39

MAJOR ISSUES IN NIGERIA DAIRY VALUE CHAIN DEVELOPMENT

ANNATTE, I[1].; FATIMA B.A[2].; WAMBAI, Y. S[2].; RUMA, B. M[2].; GIDEON, M. M[2].; LAWAL U. S[2].; LAWRENCE, O. I[3].; ALIGANA, M[2].; SHOFELA, A. K[2].; MARK, L. K[4]. and KASIM, H. I[4].

[1]National Agricultural Extension and Research Liaison Services, Ahmadu Bello University Zaria. [2]Federal Ministry of Agriculture and Rural Development; [3]FrieslandCampina, WAMCO Nigeria PLC, Plot 7B Acme Road Ikeja Industrial Estate Ogba, Ikeja, Lagos,[4]AgriMetrica, 1551 Hanson Road, Ellensburg, WA,98926

***Correspondence:** annatte2002@yahoo.com, +234 803 474 6074

SUMMARY

Cluster Youth Dairy Development Programs in Nigeria are expected to make concrete contributions towards achieving market-led and knowledge-based transformation agenda of the Federal Government. To that end, strengthening capacities of the youths and linking them to production development program should deserve due policy attention. Lessons from initiatives in other countries are thus crucial to inform policy and the development of context specific innovative strategies. This paper aims to make a modest contribution to the discourse in Nigeria on dairy cluster development and the related dairy 'developmental institutions'. The paper highlights the major issues in Nigeria dairy value chain development; it also discusses key strengths and constraints, the opportunities and challenges that government should address to be able to realize their mandates and to meet ever changing expectations.

Keywords: Nigeria, Dairy, Value Chain, Development issues

INTRODUCTION

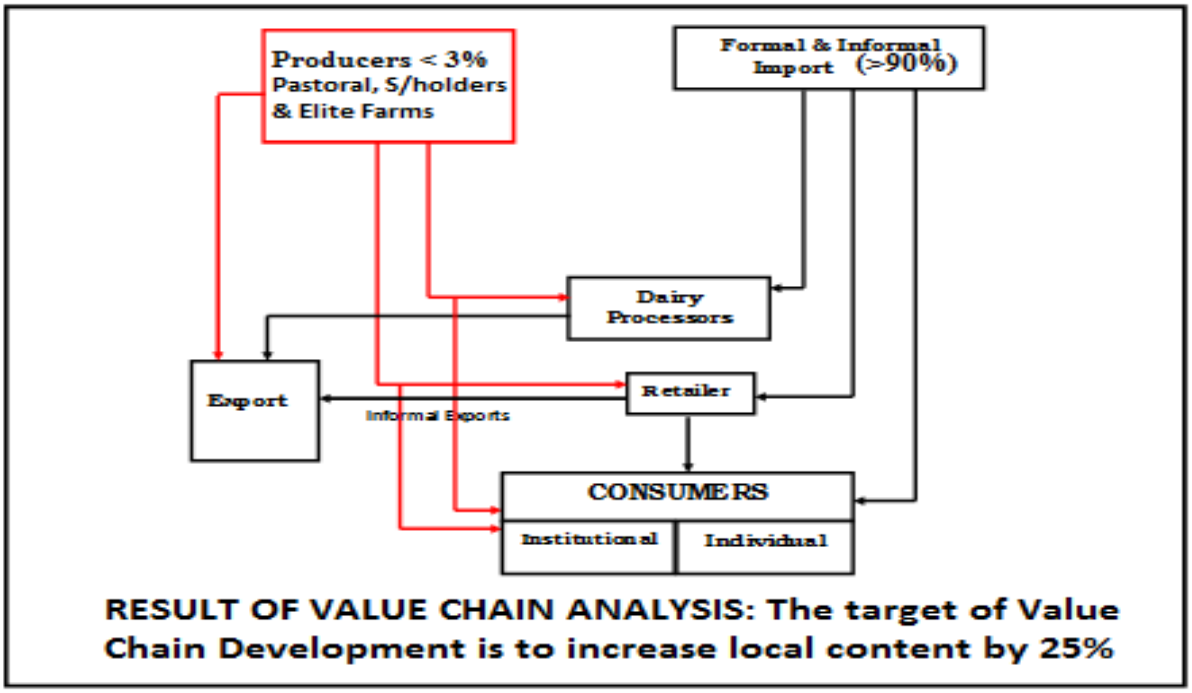
Nigeria is a potential market for 1.3 million tons of milk valued at about N450 billion annually (5). Of the estimated total domestic fluid milk production in 2006 for example, only about 600,000 litres (worth about N232.5 million) entered formal marketing channels through corporate, public and other private milk collection co-operatives schemes from migrant herdsmen and the output of the few commercial dairy farms. The rest was either consumed by the producing families or traded informally within the producing communities. Imports of milk powder and other processed dairy products were estimated at $275 million in 2006. Industry sources also estimate Nigeria's national herd at 14 million heads (including approximately 900,000 milking cows).

Average yield from this traditional system is 0.7 – 1.5 litres of fluid milk per day. During the dry season, this figure drops to about 0.5 litres. With supplementation using cotton seed cake, milk yield could be increased to between 1.5 and 2.0 litres (1, 2, 3). With improved management and appropriate selection, milk yields of up to 4 litres have been obtained in the local herd. The "White Fulani" or "Bunaji" breeds are the dominant dairy breed. The pastoralists own and maintain majority of the cattle and the cattle are fed on natural grass under the traditional system with little supplementary feeding regimes in some places. Migrant pastorals move flocks over months and many miles to find pasture during the dry season, which often results in weight loss, low yields and sickness. A few commercial livestock farms

maintain crossbreeds of Holstein Friesians, Brown Swiss and Montpellier for fluid milk production and the average yield is 8 to 18 litres of raw fluid milk per day (compared to the national average of only 4 litres). On orthodox farms, the foundation stocks are mostly imported from South Africa, Europe and Australia. Average yield of pure breeds under corporate management conditions is 30 litres per day.

Currently, most of Nigeria's dairy processors import milk powder and re-constitute it into liquid milk and other dairy products such as yoghurt, ice cream and confectioneries. Others repackage imported powdered milk into small affordable sachets. The imported dairy products (mostly milk powder) come from New Zealand, Australia, South America, the EU, India, Ukraine, Poland, and other smaller suppliers. Multi-national firms including Frieslandfoods (Netherlands), Glanbia (Ireland), Cussons-PZ (UK), Promasidor, etc; have either partnered or acquired some Nigerian dairy firms for re-constituting and/or packaging imported milk powder.

According to the Central Bank of Nigeria report of 2010, the increasing consumption trends have cost the government a substantial amount of foreign exchange to import dairy products into Nigeria. The dairy value chain is illustrated in figure 1.



Strength and Constraints

Tables 1 and 2, show Nigeria's major dairy firms, their shares of the local markets and volumes of dairy imports.

Table 1: Nigeria's Major Dairy Firms and their Share of the Markets.

	Processor	Share of the markets
1.	FrieslandCampina,_WAMCO	50%
2.	Promasido	35%
3.	PZ- Nutricima	3%
4.	Chellarams	5%
5.	Others	7%

Annatte 2010

Table 2: Annual Average Proportions of Nigeria's Major Dairy Imports

	Products	Market share
1.	Full cream	75%
2.	Butter	8%
3.	Cheese	5%
4.	Skimmed	5%
5.	Fresh	2%
6.	Others	5%
7.	Total	100
Source: Annatte 2010		

Dairy Development Statistics: Costs and Prices

Local Dairy Products (1, 2 and 3)

- Average farm gate price of raw fluid milk is ₦60 per litre.
- Average market price of pasteurized fresh milk is N150 per litre.
- Using locally available raw milk, Average profit on local dairy processing is 8% of production cost.

Imported Dairy Products Costs and Prices (Long term averages)

- Average FOB price of imported dairy products is $2,000 per ton.
- Average clearing costs including tariffs and port inspections charges and land haulage (to warehouse) is $415 per ton.
- Average warehousing, processing and marketing/distribution costs is $365 per ton.Average production cost is $3,000 per ton.
- Average selling price is $3,450 per ton.
- Average percentage profit on imported milk powder, processing/marketing is 15 percent per ton. (Note: One 20-foot container holds an average of 17 tons of Whole Milk Powder (WMP). Imported WMP are mostly loaded and sold in bags of 25 kg).

Live Cattle

- Cost of imported Holstein Friesian and Brown Swiss breeds range from N434, 000 ($2,800) to N525, 000 ($3,500) per ton (live weight).
- Import duty is twenty (20) percent and tax/surcharges range between 5 and 10 percent of cost.
- Average cost of local breeding stock is N100, 000 to N200,000 ($650) per ton (live weight).
- It costs about $5 per day to feed a cow (breeds of imported Holstein Friesians, Brown Swiss and Montpellier) on quality local processed fodder.

Emerging Local Consumption Trends

Everyone knows and covets these products, but only a minority of consumers can afford to buy them regularly. For most town dwellers, the only kind of milk they can buy for their families is the powdered variety, sold in small portions or reconstituted to liquid milk in small workshops. In general, milk consumption is very low in most parts of Nigeria.

In those parts of Nigeria where there is tradition of milk consumption, people consume an average of 50 liters per-person each year. Across the whole of the country, the annual average ranges around 20 liters. This is four times below the minimum consumption recommended by the World Health Organization (WHO) and between 20 and 25 times less than the European average (4).

The minimum level of consumption of milk and milk products is thus far from being met. After all sorts of ethical, religious or social considerations about the consumption of milk and milk products, one basic truth stands out above all others: Nigerians have never produced milk in quantities large enough for the local consumers to adopt milk as a staple food. Even with the growth of urban populations, demand for milk products has been met essentially with imported products. In Nigerian towns for instance imported products often represent more than 90% of the supply. This figure rarely drops below 75% (7).

The disadvantages of this structure are that imported milk and milk products that urban dwellers are encouraged to take are often subsidized (5). First, there is support given to farmers in countries where production costs are high, particularly in Europe. Then there

are the subsidies on the export of powdered milk itself; as a result these products are available at low price in the local Nigerian markets. Local production, which quality standard, most of the time is not guaranteed will find it hard to get off the ground to compete favorably with the import substitutes. Producers also face a whole set of barriers: lack of organized producer cooperatives, low per animal productivity, milking herds dispersed over large areas costing so much to organize, collecting and processing and marketing the milk without dependence on government overhead capital support. There is also the high cost of inputs (fodder, medicine, concentrate, services,) and lack of trained hands in intensive systems of husbandry management and the problem of organizing the systems to achieve the national goal even when it is planned for. The resulting shortage of fresh milk pushes up the price. Faced with the competition of imported milk, local production cannot generate enough income with which to increase the supply on the market; this in turn feeds the growing trend of using milk from elsewhere.

The pressure to use imported milk has become a classical vicious circle, and getting out of it has become urgent. Only a drastic increase in local production supported by careful business supervision will provide a satisfactory supply of milk and milk products and help to generate more income for local farmers and thus trigger development in the sector from within.

Opportunities and Challenges

Milk production is growing as a source of income for rural people and also as a source of employment for the non-farmers especially as processors, marketers and transporters that make raw milk available to the processors. Hence milk can be promoted as a vehicle for hunger and poverty alleviation, in this regards, improving the quality of raw milk produced, employment generation and income of farmers will continue to be a top priority in the transformation agenda of Nigerian government.

Despite all the research and development efforts, there is significant quality gap between locally produced and imported dairy products due to cost of training local producers, poor post harvest handling and lack of access to improved processing technologies. Thus, according to dairy farmers and other value chain actors, high local demand for foreign or reconstituted products is crowding out our farmers and independent processors from their own domestic markets resulting in joblessness, low income and increased food insecurity (1, 2).

There is import potential for dairy development skills, dairy project management solution, dairy technologies, livestock genetics, dairy farm management solutions, livestock and fodders genetic materials and dairy-based food processing inputs from the United States. If properly harnessed, this opportunity is more likely to increase local capacity to develop and improve infrastructure for organized production and processing at lower cost (7).

Demand for dairy products will be sustained in Nigeria as dairy products have remained the most popular food for growing and school age children.

Beside the demand from households which keeps rising, there is increase in the number of fast food joints that is also growing with increasing urbanization.

More dairy based products are being developed and expected to increase demand for local content.

As in many parts of Africa, Livestock husbandry systems in Nigeria are a mix of crop and livestock enterprises. The key to improving the productivity of these mixed crop-livestock systems is to increase its production and improve the livelihoods of people who directly or indirectly depend on them and to produce more output from the same area of land or per animal while reducing conflicts and the negative environmental impacts. At the same time increase its contributions to natural capital and the flow of environmental services, a process which has been called 'sustainable intensification' (8)
Challenge for realizing the potential that the indigenous genetic resources offers for reducing hunger and poverty hinges on how to increase productivity of dairy farmers and marketing systems' efficiency.

In recent times however, milk has also become an icon of urban consumption, a symbol of modernity (1, 2, 3). Generations of urban consumers have acquired a taste for it through distribution schemes in hospitals, schools and advertisements praising its beneficial effects. It is found in all shapes and sizes on markets stalls and shop shelves: Packs of ultra high temperature (UHT) treated milk, cans of evaporated or condensed sweetened milk; full, skimmed or baby formula powder, butter milk or yoghurt, cream, butter and clarified butter – not to mention all sorts of cheeses and branded milk products (1, 2 and 3).

Nigerian Dairy Field Reports and Observations

The field report of the Nigerian Dairy Enterprise Initiatives implemented by USAID between 2004 and 2006 recommended mix cultural practices that rely more on the large scale usage of Artificial Insemination technology (A.I.) with semen from proven sire. The report also emphasized that A.I. services has to be an integral part of the dairy development in Nigeria for any meaningful and sustainable result (7). The report also stressed that it is difficult to develop the dairy industry using the local breeds alone. Therefore marketing of mix production cultural Practices was recommended. The Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) in its reports has recommended the promotion of dairy production cultural mix in Nigeria. This is in addition to the pastoral extension activities. There are 8 dairy farm models that are recommended to be promoted under this category:

Dairy farm (5 Cow model)
Dairy farm (10 Cow model)
Dairy farm (18 Cow model)
Dairy farm (30 Cow model)
Dairy Farm (25 Cow model)
Environmentally Controlled Dairy Farm (50 American Cows model)
Dairy Farm (100 Cow animals)
Dairy Farm (200 Cow Animal)
Dairy Pastoral (Pastoral milk collection activity models of WAMCO and MILCOPAL)

The SMEDAN studies recommended innovative dairy financing and extension project marketing mix and its elements – especially the Four Ps including farm product development, farm development pricing, place or location and promotion.

Recommendations

It is recommended that Government should appreciate the fact that a new institutional playing field is emerging

between civil society, government and private parties in the quest for socio-economic and rural development. Thinking about the relationships between government, the private sector and civil society has changed considerably. Instead of being perceived as passive beneficiaries, dairy farmers should be seen as citizens who have the right to participate and to demand good local governance. Local governance for rural dairy development should be addressed as a multi-stakeholder process with interactions taking place at different levels amongst actors with different ambitions or perceptions. The private sector should engage in partnerships for pro-poor development. The role of governments should shift towards creating an enabling environment and facilitating development rather than steering it. Success of government projects should be measured in terms of responsiveness and accountability to citizens, improved service delivery, promoting pro-poor economic development, and its capacity to negotiate with the private sector, NGOs, local authorities and central government. These changes challenge the actors involved to develop new "institutions" – formal and informal norms, procedures and practices, accountability relations – in order to adjust to new functions and challenges in society.

Government should concentrate effort on important areas within the value chain and channel resources to addressing them. The challenges to improve value chain efficiency by making available supervised cooperative infrastructure, skill training, technical support services and easy farm credit infrastructural facilities and mobilization of new generation of dairy farming communities should also be addressed.

There is need for urgent intervention in the dairy industry to ensure proper post harvest handling and marketing.

Value addition is required to increase the local production economic values and consumer appeal of milk based products. Increasing the national dairy production with value added processing would contribute significantly to reducing the rising costs of dairy imports and would also provide income sources to dairy farmers and all those involved in the dairy value chain.

Distributed database technology is expected to have a significant impact on rural dairy data management in the upcoming years because distributed database systems have many potential advantages over centralized systems especially for geographically distributed projects. There will be need to develop total dairy management information systems. Nigerian Livestock Development Programme (NLDP) and other stakeholders may have to work closely with the Dairy Records Management System (DRMS) to develop modalities for setting up dairy data service centre(s) in Nigeria. There is need to build the capacity of project managers through multinational partnerships in dairy resource data management and developing the right dairy data base and project packaging and other useful skills that enhance efficiency of operations.

Government should develop a proposal for establishing dairy- clusters. A cluster as used here is a mixture of production cultural practices and it will include registered and unregistered dairy cow farms producing milk as well as parallel involvement in downstream technical support service organizations supplying services and inputs into the systems. Some others will engage with processing and distributing the

derivative products. Therefore the dairy industry which these clusters will serve will involve the production of raw milk by registered cooperatives. The cooperatives will process their milk into goods such as consumer milk, butter, cheese, yoghurt, condensed milk, dried milk (milk powder), and ice cream using processes such as chilling, pasteurization, and homogenization.

SMEDAN has already identified some farm prototypes that should be promoted in Nigeria. This is in addition to the grazing reserve models and other traditional pastoral development models. This farm types are not typical to the Nigerian farmers and even where the farmers have the resources to implement them, data from such farms are not properly documented. There is therefore the need to identify these farms and characterize them. The farm characterization studies will aim at understanding the different typical dairy farm types that are commercializable in Nigeria. SMEDAN has provided a list of them as amended in this report. Farm characterization studies will require collecting data on the milk production, goals, feeding system and production constraints and identifying cattle breeding strategies. A set of detailed designs of the farm type will require the services of several experts to achieve.

ACKNOWLEDGEMENTS

The authors are grateful to the FMARD for funding the dairy production tour; AgriMetrica for hosting the team, National Agricultural Extension and Research Liaison Services, Ahmadu Bello University, Zaria; FrieslandCampina Foods WAMCO, Nigeria; Nether Industries, Inc. in Seattle, Washington; Department of Animal Science of North Carolina State University and other stakeholders for their numerous contributions.

REFERENCES:

1. Annatte, I. (2011a) Evaluation of Federated Rural Dairy Cooperatives in Nigeria. Publisher: VDM Verlag Dr. Müller GmbH & Co. KG Dudweiler Landstr. 99, 66123 Saarbrücken, Germany. ISBN: 978-3-639-36698-3 264 pages

2. Annatte, I.; Auta, S. J.; Arokoyo, T.; Kaura, M.B.; Dikko, H.; and Hussaini, A.T. (2011b) Livestock management practices among Nomadic and Agro-pastoral women: A case study of three LGSs in Kaduna State, Nigeria. *Journal of Research in Agriculture*, Vol. 8, (2) 94-101

3. Annatte, I.; Auta, S.J.; Dafwang, I.I.; Umaru, M.; Aribido, S.O.; Iwuanyanwu, I.E. J.; Ikani, E.I.; Nasiru, M. and Jegede, O.C.(2011c). Survey of some Rural Dairy Activity Sites in Nigeria. *African Journal of Agricultural Research and Development*. Vol. 4 (2) 31-37

4. Annatte, I. (2010) Nigeria- Milk production Fact Sheet.
In: IFCN Dairy Report 2009, International Farm Comparison Network, Dairy Research Center, Kiel, Germany Vol. 3.63 (129)

5. Anon (2002) Dairy Development: beyond the pail for agricultural development in ACP countries. Spore 102 pg 4.

6. CBN (2010) Statistical bulletin of the CBN, Abuja Nigeria

7. Ogundipe, G.A.T, Babalobi, O.O. and Annatte I. (2003) Evaluation of the Extension Activities of the National Livestock Project Division, Kontagora, Nigerian. *Nigerian Veterinary Journal* vol.24 (3) 137 – 144

8. Land O'Lakes, Inc. (2007) Dairy enterprise initiative Programme-Nigeria. Final report of USAID project Grant EDH-G-00-03-00017-00, Copyright 2007 by Land O'Lake, Inc. 37 pages

9. Peter Ballantyne (2012) Transforming agric systems through sustainable intensification.
http://agintensificationafrica.wordpress.com