

**CHARACTERIZATION AND ASSESSMENT OF BENEFITS AND HEALTH RISKS
ASSOCIATED WITH URBAN SMALLHOLDER DAIRY PRODUCTION, DAGORETTI
DIVISION, NAIROBI CITY, KENYA**

**STAKEHOLDERS' WORKSHOP REPORT HELD ON 17TH NOVEMBER 2005 AT
SHALOM HOUSE, OFF NGONG ROAD, DAGORETTI.**

**PROJECT FUNDED BY INTERNATIONAL Development RESEARCH CENTRE
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EXECUTIVE SUMMARY

A one-day stakeholder workshop involving provincial administration, city council officials in the health and sewerage departments, community representatives, human health service providers, veterinarians, agricultural officers and researchers was held to jointly map out their perceptions of the benefits and risks associated with urban agriculture (UA) activities, raise awareness about potential health hazards and generate support, good will and interest in the study.

The workshop managed to achieve its goal through presentations by the stakeholders', plenary discussions and facilitated group work which, managed to raise awareness of the risks associated with urban small holder dairy production. The interest generated among the stakeholders will not only result in greater partnership during the project but also lead to utilization of the results obtained from this research. These will be key to influencing policy to support change and manage risks associated with urban agriculture (UA).

INTRODUCTION

Mougeot (1999) described UA as an industry located within (intra-urban) or on the fringes (peri-urban) of a town, a city or metropolis, which grows or raises, processes and distributes a diversity of food and non-food products (re-)using largely human and material resources, products and services found in and around the urban area, and in turn supplying human and material resources, products and services largely to the urban area

Approximately half of the world's population lives in cities. This is expected to rise to over 60% by the year 2005. The major problem facing governments is production of food supplies to feed this growing population

UA is contributing significantly to the food self reliance of many cities. Food reliance does not necessarily translate into food sufficiency, but it can go along way in reducing food insecurity for vulnerable groups. City farmers cultivate a wide range of crops such as kale (*sukuma wiki*), tomatoes, beans, cowpeas, maize, Irish potatoes, sweet potatoes, arrow roots and bananas among many others. The yields from these crops are substantial. It is estimated that 50,000 bags of maize and 15,000 bags of beans are produced in Nairobi annually.

Apart from crops, livestock is a major component of urban farming especially in the open spaces on the outskirts of the city. In 1998 there were 24,000 dairy cattle in Nairobi, worth roughly one billion shillings. Conservative estimates show that about 42 million liters of milk are produced within Nairobi annually. This, in economic terms, means that milk alone generates up to KShs. 800 million annually, when priced at Kshs.20 per liter.

Despite the potential of urban agriculture in terms of food, employment and income generation, the benefits of urban farming have not been adequately explored. The major challenges facing the farmers are associated with health issues such as contamination from pathogens and toxic chemicals in the waste materials used in urban farming

systems. This raises concerns as to whether food produced under these conditions is safe for human consumption.

This project is focusing on identifying the hazard posed by *Escherichia coli* O157:H7, bovine tuberculosis, brucellosis, cryptosporidiosis, leptospirosis, and antibiotic residues to urban small holder dairy farmers, neighbors and consumers of dairy products. Before engaging the communities in Dagoretti in discussions pertaining to their perceptions of the benefits and health risks associated with this enterprise, it was deemed necessary to hold this workshop to solicit for perceptions of key stakeholders, obtain their good will partnership and resolute to utilization of the results of this study to influence policy on urban agriculture.

SPEECHES

OPENING SPEECH BY CORNELIUS WAMALWA, DISTRICT OFFICER, DAGORETTI DIVISION, NAIROBI.

Ladies and Gentlemen,

I am glad to officiate in the opening of this important workshop in health risks associated with urban smallholder dairy production.

In deed dairy farming (industry) is an important gauge of social economic and cultural progress. The migration into urban centers and wide spread poverty has led thousands (if not millions) of our people into urban smallholder dairy production.

Dagoretti Division alone has 240, 054 residents (1999 census). A good dairy industry therefore contributes to economic and social being of our people.

Ladies and gentlemen, this workshop is therefore very timely. I am confident that your deliberations will focus on this group with particular attention on the health risks of urban livestock production in Dagoretti Division. My appeal to you is to come up with ideas that will ensure that the Dagoretti people get the benefits of their urban enterprise.

Ladies and gentlemen, as you proceed I urge you to pay special attention to the health risks and security of our women and children. For women play an immensely crucial role in farming while, children are the future of the Nation.

The challenges facing dairy industry are: 1). Milk handling, 2) theft of animals, 3) Lack of artificial insemination, 4) high costs of feeds and 5) diseases.

In concluding my remarks, I take this opportunity to express my gratitude on behalf of the Government to the organizers of the workshop (University of Nairobi, Faculty of Veterinary Medicine, in particular to Professor Erastus Kang'ethe). I am informed that participants to this workshop are drawn from various sectors both Public and Private with a multidisciplinary team of researchers from University of Nairobi, Ministry of Health and Agriculture.

I am confident, therefore that you will come up with sound and practical recommendations on health risks associated with urban smallholder dairy production.

On behalf of the Provincial Commissioner, Nairobi area, it is my great pleasure to wish you fruitful deliberations and declare this Urban Smallholder Dairy Production workshop officially Open.

CHALLENGES OF LIVESTOCK PRODUCTION IN CITY AREAS

Speech given on behalf of the Director of Veterinary Services during the stakeholders' workshop on "Health Risks Associated with Urban Small holder Dairy Production" by Dr. Thaiya J. W.

Introduction

Urban livestock farming is neither new nor unique to Nairobi. It is practiced world over. With increasing urban population mainly due to rural urban migration and increasing levels of unemployment, more persons are turning to urban farming to provide food for their families and as an income generating activity. For some this is their sole source of income whereas for others it is a means to supplement their meager earning. For most persons raised in farming communities there is a basic farming instinct whereby they will engage in farming whenever possible. Urban farming is attractive due to its closeness to market with most of the products sold at the farm gate. There is also a concentration of animal food processing plants including slaughterhouses and milk processing plants. This leads to value addition of the livestock products. For those who can afford there is also a concentration of animal feed manufacturers and veterinary service providers. This plus the ready market makes urban farming a very lucrative business venture.

Benefits of Urban Livestock Farming

Among the major benefits of urban farming are income generation and creation of employment. Other than providing for their families, urban farmers also provide the general population with the much-needed proteins, thus contributing to national food security.

Production System in Urban Farming

Due to scarcity of land in urban areas, intense farming is practiced, the main type of animals reared are dairy cattle pigs and poultry. There is more concentration of pig and poultry production in the informal settlement areas than dairy farming. The main reason being that dairy farming is more capital intense and that pigs and poultry are mainly left to savage for food. Due to lack of space, especially in the informal settlement, most of these animals share housing with their owners.

Health Risks Associated With Urban Dairy Farming

Due to these animals being confined, there is reduced risk of disease spread between herds, but an increased risk of spread within herds due to close contact. Close contact between human and animals poses a serious problem of transmission of zoonotic diseases. These include bacterial, viral and parasitic diseases. The risk of diseases is not just from the sick animals only but also from the animal waste, which becomes good breeding site for other pests which may be reservoirs of diseases.

The waste from animals includes their excreta and the carcasses of dead animals. This causes a serious problem of disposal leading to environmental pollution especially the problem of smell and soil and water pollution.

Most of the animal excrement is used as fertilizer for the households' kitchen gardens. Since this waste is not treated it poses the risk of spread of pathogens through food crops. This becomes even more serious there is also scarcity of clean water to wash these vegetables.

Livestock products pose a great risk of disease spread if not properly handled. This is because the products are likely to move distances outside the local areas; this may result in spread of both human and animal disease within and without the local community.

Challenges of Urban Livestock Farming

Urban farming is increasing, this means that the risks highlighted above are bound to become even more intense and especially in the face of increasing poverty. There is need for community education on measures that can reduce these risks. There could be much research work done on the benefits and risks of urban farming but due to lack of

centralized databanks both policy makers and future researchers are not able to use the knowledge and experience of previous researchers to improve the communities where research has been carried out. There is need to establish such databanks both with the concerned government departments and research institutions. Results of research work should benefit the communities by being incorporated into government's development policies.

Not much is documented concerning the current situation of health problems associated with urban farming. This could be either because not much work is done or that information is lacking. There is need for more research work to determine the actual benefits and risks and the appropriate mitigation measures to control these risks. A case in point is the current information in the department of veterinary services that only two cases of bovine tuberculosis have been reported in the country. While this may be the case, no active surveillance has been done to rule out the fact that there could infact be cases in our cattle population. The Ministry of health may not be able to say with certainty that the current increase in human tuberculosis cases may not have a proportion of bovine tuberculosis. Drug residues in livestock products are a major non-tariff barrier to international trade in livestock and livestock products. Though the Department has surveillance program in place to assess the risk of drug residues the current financial situation cannot allow it to do a countrywide survey.

Conclusions

The veterinary department stands to gain tremendously from the results of this work, as it will add current findings into its databank. The diseases this project is going to investigate are important, not only because of their zoonotic nature but because they may also contribute to the country's failure or success in penetrating the international livestock trade.

PHD/HI/WORKSHOP/2004/5

16TH NOVEMBER, 2004

THE CITY AND URBAN AGRICULTURE

By Chief Public Health Officer Nairobi City Council

CITY

A city is defined as an incorporated area that is self-governing according to the laws of its state.

The City of Nairobi has a population of 3.2 million people and occupies an area of 680 km². It experiences long rains between March and short rains in the months of October and November. The areas unoccupied by houses and tarmac have fertile soils. Conducive for small scale farming.

URBAN AGRICULTURE

The following are some of the farming activities undertaken by city dwellers, their perceived benefits and the health risks they pose.

<u>FARMING ACTIVITY</u>	<u>PERCEIVED BENEFIT</u>	<u>HEALTH RISK</u>
1. Growing of vegetables	Income generating activity	Higher E. Coli count from contaminated water/sewage used for irrigation.
2. Dairy farming	(1) Income generating activity (2) Income from milk and milk products.	- Worm infestations - Brucellosis - Infection from the sale of adulterated milk by addition of water and preservatives
3. Hog keeping	Income generating activity	- Smell nuisance
4. Poultry keeping	Income generating activity from the sale of eggs and chicken	- Smell nuisance - Pests - Cross infection because of human and poultry cohabitation
5. Bee keeping	Income generating activity from the sale of honey and honey products.	- Adulteration of honey - Bee stings.

IRRIGATION BY USE OF SEWAGE

Most farmers especially at the estates use sewage for irrigating their small vegetable farms and arrow roots.

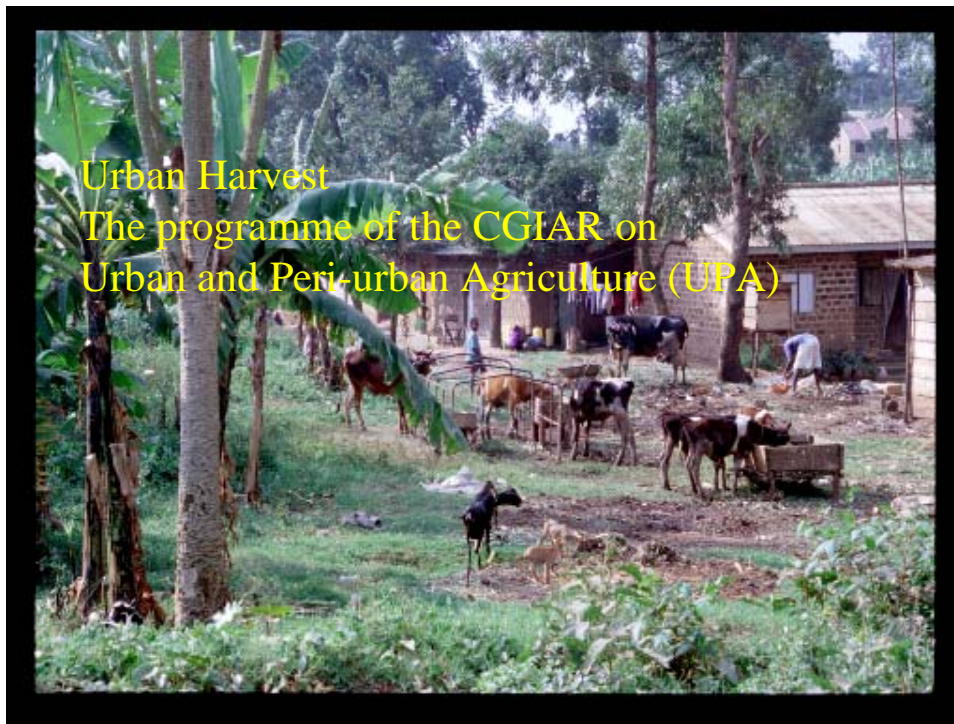
At times, this sewage may contain traces of heavy metals like mercury and lead which are known to persist the food chain.

While we appreciate that such activities are geared towards poverty minimization, we must note with a lot of concern on the Public Health Implication through such irrigation. Also contamination by ova and cysts cannot be ruled out – not to mention other diseases like cholera and typhoid.

URBAN AGRICULTURE – URBAN LIVESTOCK FARMING

By

**Diana Lee-Smith, Regional Coordinator Urban Harvest, International Potato Centre
ILRI NAIROBI**



What is the CGIAR?

- Consultative Group on International Agricultural Research
- 16 centres worldwide
- 2 in Nairobi: livestock (ILRI) agroforestry (ICRAF)
- Network of research partners

CGIAR Goals

- Food Security
- Poverty Alleviation
- Environmental sustainability

Why UPA? Urban population is increasing

- 7.5 billion people by 2020
- 57 percent urban
- Over 500 million urban Africans



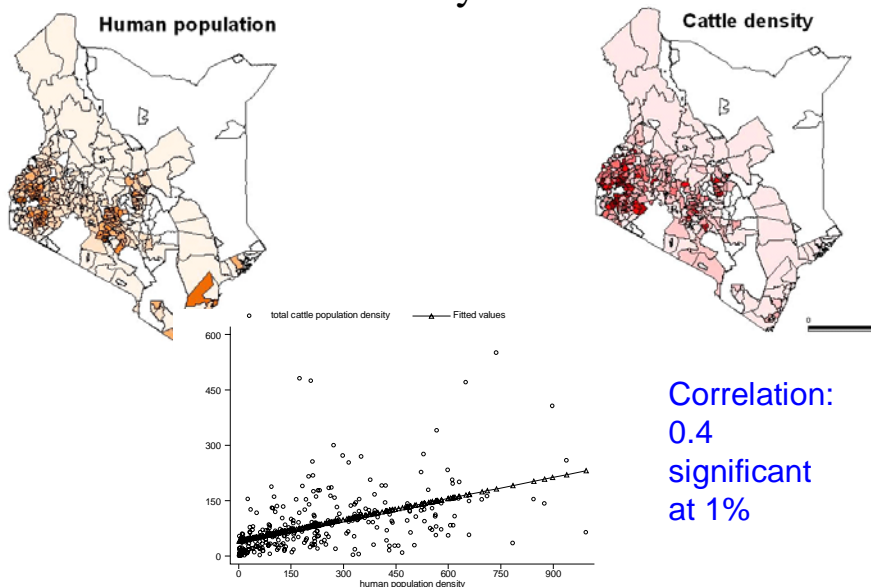
UPA production

- 800 million involved worldwide (UNDP 1996)
- Nearly 40% urban Africans depend partly on urban agriculture for their food - 200 million by 2020 (RELMA 1998, Urban Harvest 2002)

Urban poverty in Kenya

- 1999: about one third of Kenyans were living in towns (11 million)
- 2005: nearly half will be living in towns (16 million)
- 60 percent of Nairobians live in slum areas, with poverty levels up to 78 percent.

Cattle follow people closely: example from Kenya



Dairy production in Nairobi

- 24,000 dairy cattle in Nairobi (1998)
- Worth about one billion shillings.
- About 42 million litres of milk produced in Nairobi annually.
- Milk alone generates up to Kshs. 800 million annually, when priced at Kshs.20 per litre.

Other livestock in Nairobi

- Quarter million chicken reared
- 45,000 goats and sheep
- Kasarani Division, 180,000 trays of eggs in 1998, worth Kshs. 27 million.

Nutrition and UPA in Nairobi slums

- Children 6 – 60 months:
 - wasting five to 13 percent
 - stunting 10 to 57 percent.
- Poor nutrition worsens HIV-AIDS
- Children in UPA households are better off (if mother is the farmer)

UPA in Africa – the pros

- UPA alleviates poverty
- UPA is close to the market
- Higher intensity of production
- UPA re-cycles wastes as soil nutrients



UPA in Africa – the cons

- Health risk: organic pathogens
- Health risk: toxic contaminants in air, water and soils
- Health risk: Proximity to animals – zoonotic disease
- Weak extension services



KARI UPA policy workshop July 04

- Employment creation and poverty reduction
- Health and waste management
- Household nutrition
- Land-use and physical planning
- Legislation and governance

Research on Livestock and Human Health

- Modelling the impacts of UPA on human health – Kampala
- Collaboration with ILRI on livestock, environment and human health
- IDRC support for research on assessing the health risks of UPA, including livestock

Research approach

- Establishing research and policy linkages
- Multi-stakeholder research, including NGOs, farmers and urban poor groups
- Building partnerships with non-research groups, such as NEFSALF:
 - Nairobi and Environs Food Security, Agriculture and Livestock Forum

PROJECT GOALS AND OBJECTIVES
BY
PROF. ERASTUS K. KANG'ETHE, PROJECT LEADER, DEPARTMENT OF PHPT,
KABETE CAMPUS UNIVERSITY OF NAIROBI



Objective

- To evaluate the benefits and human health risks associated with small holder dairy production system in Dagoretti and identify potential mitigation measures, thus improve human health and livelihoods



Specific objectives

- A]. Assess the KAPs of women and men involved in dairy farming and those of their non-farming neighbors
- PA with farming and non-farming households
 - Identify benefits, health risks and mitigation strategies
 - Gender analysis to identify persons actively involved, time spent
 - Perceived contribution of UA to household economy

Time frame January - February.



Specific objectives

B]. Determine the prevalence of E. coli 0157:H7

- Milk and feaces will be collected and attempts made to isolate the organism
- Antibiotic sensitivity tests
- Tests to determine the ability of the isolates to produce the toxin and plasmid profiles will be done

Sampling February - April



Specific Objectives

C]. Brucellosis

Milk and serum samples will be collected

- ELISA test done to detect antibodies to Brucella organism

Sampling February - April



Specific Objectives

D] Tuberculosis

Intradermal tests will be done

February - April



Specific Objective

E]. Cryptosporidiosis

Feacal samples from calves under 6 months and adult animals housed together with calves

February - April



Specific Objective

F]. Leptospirosis

Serum samples from calves and adult animals
will be collected

Tests to determine presence of antibodies

February - April



Specific Objective

H]. Assessing economic contribution of
urban small holder dairy

Questionnaire will be administered to
HH

January - February



Specific Objectives

I]. Identify mitigation strategies and their evaluation

Done during every hazard evaluation

Synthesis at Farmers workshops and Final stakeholders' workshop to disseminate information.

Community - April - June

Final Key Stakeholders' - June



Research Team

- Dagoretti Community
- University of Nairobi- PHPT & DCH
- Ministries of :
 - Health
 - Agriculture



PLENARY DISCUSSION SESSION

During this session, Provincial Director of Health, had been excused questions directed to his presentations were not dealt with adequately by other presenters.

Farmer: According to the press, 16th November 2004, Nation, Kenya is faced with the threat of Livestock export ban due to lack of disease policy and enforcing of laws regarding disease control. What is being done? The remarks were attributed to the Chairman of the Kenya Livestock Breeders Association during a field day at CAIS, Kabete.

Ans: The Ministry of Livestock Development and Fisheries is working hard to prevent such a situation occurring. Data from research work like this will assist the Ministry find solutions where problems exist. Farmers too can help the Ministry by seeking redress and report cases to the Ministry Offices for corrective action to be taken. It is our responsibility all stakeholders in Livestock sector and we should take it seriously.

Researcher: The diseases discussed by the Ministry of health, are they the ones that have been encountered in Nairobi hospitals or just a list of possible diseases? Diana's presentation shows people keeping pigs in Kibera roaming and not housed as law requires, What is the City Council doing about this since we know that *Cysticercus cellulosae* is on increase? Thirdly, what is the city council doing in regard to irrigation using sewage?

Ans: The Council is trying its best to control irrigation using untreated sewage. The farmers downstream are breaking the sewer pipes and it takes time to repair these. Teaniasis could be common and the communities keeping pigs need to be educated on the dangers. Pigs consumed in the city come from many areas and as such there could be importation into the city of diseased pigs which could be infested with worms. The pig management Act need to be enforced and stray pigs shot as it is being done in towns like Nyahururu and Nakuru. Nairobi should follow suite.

Farmer: What is the situation regarding TB in animals and what will be done if it is detected in a farm?

Ans: Incidences of tuberculosis are on the increase especially in immune compromised people like those with HIV/AIDS. What we are not certain is the proportion of cases that are due to bovine tuberculosis. Only two suspect cases of bovine tuberculosis have been reported in 1960 and 1999.

On detecting bovine tuberculosis positive cases, the family will be advised to seek further screening in government hospitals and if found positive, be treated. Treatment for tuberculosis is now free and therefore the household will be in a better position. The animal will be sacrificed and inspected according to the laws of Kenya for human consumption. This will constitute a salvage value; the project will offer partial compensation to enable the farmer purchase another animal. This will not be full compensation of the animal value.

Farmer: Milk hawking is being criminalized. What is being done about it as it gives us market for our milk? Is it a risk?

Ans. Regulations governing food sales are contained in the Public health Act and Food, drugs and chemical substance Act. These need to be enforced. However, according to a Centre file 102019-004

recent research work by SDP project, 84% of the milk is sold informally and provides livelihood for thousands of people. Hawking can not be whisked away. We need to educate and train hawkers on hygienic methods of milk sales and educate on possible risks hawking can cause. The City Council has data on those licensed to operate bars and other milk outlets. These are open to public inspection.

Farmer: Not in distance past, we used to have extension services available to advise us on the better farming methods. Now they are none existent. What has gone wrong? How are we to proceed with our activities without advice?

Ans: Government has changed its policy on extension, so that it is now demand driven. Farmers have to seek extension officers and demand the services they need.

Farmer: Artificial Insemination services have become very expensive for farmers. Why is this?

Ans: The government has ceased to subsidize the cost of AI services and has therefore liberalized and privatized the services. Private entrepreneurs are now in charge of providing the services to the farmers. The government however is controlling the quality of the semen locally produced or those imported into the country.

FAMERS' RESPONSE TO CONSTRAINTS FACING URBAN SMALLHOLDER DAIRY FARMING

Two farmers' representatives give their presentations on what they consider to be the constraints faced by urban smallholder dairy production.

Farmers do not know how to keep records of their enterprises. As a result they are not aware whether they are making losses or profits. There is need for training on basic farm management. For broiler and pig keeping it is easy because after 8-12 weeks and 8 months you get returns for broilers and pigs respectively. For dairy it is more difficult.

Farmers' are faced with high competition for their dairy products especially milk. Majority are selling milk to shops and kiosks which are paying low prices. Marketing channels and market access is not easy. Assistance to market these products will help a lot. Assistance to form organization that will market dairy products will be highly appreciated. This will cause the farmers to improve on the quality of milk, in order to meet the market requirements so as to earn them more income.

Animal feeds manufacturers have become many and the quality of such feeds is not the same. Some are of poor quality despite the costs. There is need to standardize the feeds quality and prices so that farmers are able to get their money worth.

Dagoretti being on the outskirts of the city, garbage collection is un attended. This is promoting keeping of pigs that will scavenge on the uncollected garbage. This will eventually cause increase in diseases both for the pigs and humans.

River Kabuthi which traverses the division is highly polluted by the slaughterhouses upstream. This means that farmers may lack water to use even though the river passes by.

Insecurity in the area is high and this forces farmers to keep their animals close to the main house for fear of being stolen.

The Department of Public Health needs to be more vigilant on checking adulteration of milk, mushrooming of backyard butcherries, food cooking along roadsides and growing of vegetables on road reserves in order to control possible outbreaks of epidemics.

Farmers need more seminars to educate them on farming and how to market the produce of their farms. The extension officers need to be more visible visiting the farmers and advising them at their farms. This is the only way it will make a lot of sense to the farmers.

FACILITATED GROUP WORK

The participants were divided into four groups and each group discussed the following issues:

1. Perceived benefits of UA with focus on dairy farming
2. Perceived problems (health risks) of UA specifically dairy farming
3. Possible solutions to the problems raised.
4. Comments on the proposed Risk Assessment Study

After the facilitated group work the responses from all the groups were presented in a plenary session and compiled as follows:

A). BENEFITS OF URBAN SMALLHOLDER DAIRY PRODUCTION

Group 1	Group 2	Group 3	Group 4
1. Income from sale of milk and manure	1. Easier to market the dairy products	1. Creates employment	1. Offers family income
2. Income from sale of bull calves and heifers	2. Its cost effective (resources are within reach and better prices are given).	2. Contributes to food security	2. Manure used for bio-gas
3. Use of manure to improve soil fertility on the farms	3. Support services for the sector are easily available (e.g. veterinary, AI and extension services).	3. Ready market available	3. Hides as a source of income
4. Livestock acts as social security in paying school fees	4. Income generating activity	4. Safe guards our farming culture	3. Social prestige
5. Improved family nutrition	5. helps to improve household nutrition	5. Provides manure cheaply	4. Creates employment
	6. Provides farm yard manure	6. Encourages recycling of crop residues and poultry waste	5. Provides family with meat
	7. Milk is the raw material for agro industries thus market available.	7. Use of cattle dung for energy generation (bio-gas)	
		8. Income generating activity	
		9. Enhances community development	
		10. Offers socio-psychological fulfillment.	

B). PROBLEMS ENCOUNTERED IN URBAN SMALLHOLDER DAIRY PRODUCTION

Group 1	Group 2	Group 3	Group 4
1. Animals act as source of infection for man 2. High costs of veterinary services 3. Unavailability of quality feeds 4. High costs of animal feeds 5. Milk market to Nairobi metropolitan is in accessible due to competition 6. AI delivery services non existence 7. high costs of AI services when available 8. Environmental pollution by animal waste and noise 9. Theft of animals	1. Start capital is high 2. Lack of fodder 3. Expensive labor both family and hired 4. Social nuisance flies, smell, court actions and noise 5. Environmental pollution arising from poor disposal of manure 6. Insecurity of the cows and the farmer. 7. Animals are sources of zoonotic diseases (brucellosis, anthrax and E. coli) 8. Cattle sheds creates conducive environments for breeding of mosquitoes and nuisance flies 9. Stressful to the farmer, workers, children and to the animals themselves	1. Lack of production, management information and skills 2. Lack of market for products due to middlemen 3. lack of quality feeds 4. High cost of feeds 5. Limited space for farming 6. Insecurity forces to be in close proximity to the animals 7. lack of good breeds leading to poor yields 8. Diseases like mastitis, foot and mouth, and abortions 9. Smell 10. Flies 11. Hygiene 12. Lack of knowledge to link diseases and animal keeping	1. Environmental pollution as a result of poor disposal of manure, smell, flies and noise 2. Transmits zoonotic diseases (T.B, Anthrax, Rabies, Hay fever, Leptospirosis and E. coli) 3. Contributes to the development of microbial resistance to antibiotics 4. Likelihood of heavy metal poisonings from use of polluted roadside fodder.

C). SUGGESTED SOLUTIONS TO THE PROBLEMS.

Group1	Group 2	Group 4
1. Formation of common interest groups to handle the problems 2. Consulting with the extension officers on implementation of their ideas 3. community policing to curb insecurity 4. Educate farmers on good hygiene on the farms 5. Revision of by-laws of city council in relation to urban agriculture	1. Provision of affordable credit 2. Imparting farmers with proper husbandry skills 3. Government to provide subsidy or lower taxes to encourage production 4. Train farmers on farm management skills 5. revision of city by-laws to promote urban agriculture (zoning) 6. Proper disposal of manure and disease control	1. proper waste disposal 2. Educate members of the public through chief's baraza on the dangers of urban agriculture 3. Encourage formation of common interest groups to educate farmers 4. Provide vaccines for animals diseases 5. Proper handling of dairy products.

D). PARTICIPANTS' VIEWS ON THE PROJECT GOALS AND OBJECTIVES.

Group 1	Group 2	Group 3	Group 4
1. Creating public awareness on health risks associated with Urban agriculture 2. The awareness will assist the community come up with possible solutions	1. Come at the right time 2. If properly executed will help the stakeholders (consumers, producers, government, entrepreneurs, and international markets) 3. Should be owned	1. Possibility of the farmers failing to grant permission to collect samples	1. Very appropriate 2. Has enlightened the participants on the dangers of urban agriculture 3. Good forum for stakeholders 4. Its time consuming for the farmer and

3. Help in quantifying the size and nature of the health risks associated with urban agriculture to the policy makers in order to make informed decisions	by all stakeholders at all stages for sustainability 4. Should be replicated in other urban settings where dairy farming is being practiced 5. Law enforcement officers e.g. City council should be involved		extension workers.
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OBSERVATIONS/REMARKS

The workshop was well attended with representatives of the main stakeholders (Ministry of Health, City Council, Director Veterinary Services, Local Administration and Farmers) present and giving their addresses.

The diseases encountered in Nairobi Health centers, thought to be associated with urban dairy production was an eye opener to the farmers on the many diseases they can contract from this enterprise. This was supplemented more by Diana Lee- Smith presentation of urban livestock farming on the issues of pigs that are scavenging on open sewer as a source of tape worm infestations. The situation needs careful control.

The farmers' problem centered on dairy management, market access and general environmental hygiene. The risks posed by small holder urban dairy farming did not feature in their presentations. This was perhaps lack of knowledge of the risks and what these risks mean to the benefits accrued from dairy farming incase of loses due to market ban. These perceptions were not captured by the farmers' presentations.

Urban dairy production was depicted as providing employment, livelihoods and incomes for the urban farmers and contributes to the government's goal of poverty alleviation. In his opening address, the District Officer Dagoretti Division stressed the need for this research to look into the risks posed to the vulnerable groups of women and children who are involved more in urban dairy production.

Urban livestock farming is going to grow and it is time the City Council of Nairobi revised its by –laws to be in tandem with the growing city's demands of provision of quality, safe animal products to the city residents. The presentation of Diana Lee-Smith clearly did underscore the importance of urban Livestock farming.

There was consensus on the need to carry out research that would address the risks posed by urban smallholder dairy production as presented by the objectives and goals of this project. The Farmers were willing to partner with the research team in realizing these goals that would make urban small holder dairy production safe.

The Stakeholders represented in this workshop and other interested parties will be waiting to use the results of this study to influence policy to see better and safe urban smallholder dairy production. It is imperative that the results be presented to the farmers who are the key stakeholders and the others in formats that are appropriate to their dissemination.

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**CHARACTERIZATION AND ASSESSMENT OF BENEFITS AND HEALTH RISKS
ASSOCIATED WITH URBAN SMALLHOLDER DAIRY PRODUCTION, DAGORETTI
NAIROBI.
STAKEHOLDERS' WORKSHOP 17TH NOVEMBER 2004 AT SHALOM HOUSE
PROGRAMME**

8.00 – 8.30	Registration
8.30 – 9.00	Welcome and introduction of participants
9.00 – 9.30	Opening Address – D.O Dagoretti Division
9.30 – 9.45	Hon. Beth Mugo, Assistant Minister for Education and MP Dagoretti
9.45 – 10.00	Director Veterinary Services – “Challenges of Livestock Production in urban areas”
10.00 -10.15	Provincial Medical Officer – “Diseases witnessed in Nairobi associated with urban Agriculture’
10.15- 10.30	Chief Public health Officer, City Council of Nairobi – “City and Urban Agriculture”
10.30- 11.00	Tea Break
11.00 -11.30	Diana Lee-Smith, Key Note Address- “Urban Agriculture- Urban Livestock Farming”
11.30 -11.45	Project presentation- “Goals and Objectives”
11.45- 12.00	Plenary Discussions
12.00 – 12.15	Farmers and consumer groups to confer before presentation and response
12.15-12.30	Presentation by farmers’ group representative
12.30-12.45	Presentation by consumer group representative
12.45 – 2.00	Lunch
2.00 – 3.00	Facilitated group work
3.00 – 3.30	Group presentations
3.30 – 4.00	Farmer and Consumer response
4.00 – 4.45	Plenary Discussion

4.45-5.00

Closing remarks and Vote of thanks