

# Urban livestock systems in the Niayes zone in Senegal



Goats in Kumasi

Photo by Dennis Fielding

**The main agricultural cities of Senegal are located in the Niayes Zone. Production in this zone accounts for more than two thirds of the total horticultural production, and urban livestock is also well represented. Livestock keeping is well integrated into the production systems, in the form of waste recycling and animal traction. Considerable efforts are being made to restructure the production system in order to meet increasing demand for animal products. An exploratory study of the main agricultural systems in the Niayes Zone indicated that there is great diversity in farm products (fruit and vegetables as well as livestock) and also potential for further development. The main constraints to further development are the land tenure system, deterioration of natural resources, lack of organisation of farmers and minimal access to credit.**

**T**he current crisis in rural agriculture and increasing urban food insecurity is stimulating the development of urban agriculture in Senegal. In the Niayes zone urban agriculture, in the form of both crops and livestock, is increasingly contributing to urban food security. The development of livestock keeping in and around the main urban centres in the Niayes zone is making an important contribution to milk, meat and egg production, all of which are key elements in the diets of women and children and women. Livestock product marketing also contributes to income generation for women.

Under the IDRC funded project 'Integrated peri-urban systems: horticulture and livestock in West African cities', a diagnostic survey was carried out by the Senegalese

Institute of Agricultural Research (ISRA) and Dakar University (-UCAD). The systems were characterised according to location, farm size and products.

Investigations were carried out in three cities: Dakar, Thiès and Saint-Louis.

The Niayes zone is the Atlantic coastal stretch between Dakar and Saint-Louis. It comprises the four administrative regions of Dakar, Thiès, Louga and Saint-Louis. The Niayes zone is characterised by sand dunes and depressions which are often flooded, and a climate that favours agriculture. Average annual rainfall is 500 mm, and most of it falls during the three-month wet season from July to October.

Over half of the Senegalese population live in this area, which

make it the most highly urbanised zone in the country. Population density is more than 1000/km<sup>2</sup> in Dakar and 100/km<sup>2</sup> in Thiès (compared with a national average of 35 /km<sup>2</sup>). Forty five percent of the Senegalese urban population now live in Dakar, which is the main destination for migrants from the countryside and neighbouring countries. Most urban agriculture activities take place in Dakar City and its surroundings and to a lesser extent in other cities like Thiès and Saint-Louis. The higher population density, and greater market and economic strength offer more marketing possibilities to urban and sub-urban farmers in Dakar than in other locations in Senegal.

The survey distinguishes two main systems: urban and sub-urban livestock systems. The sub-urban system is further divided into Dior, Niayes and N'Diouky according to soil and climatic characteristics.

## THE URBAN SYSTEM

Production networks are predominantly family based in the urban system. Most Senegalese families keep some domestic animals such as (traditional) poultry or a few small ruminants. Although sheep production pre-

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dominates in Dakar, the cattle population is on the increase.

Economic objectives do not prevail in this production system. Rather there is a mystical dimension to keeping animals, as it is believed that “an animal will protect human beings from calamity”. Animals are housed in backyard paddocks or on rooftops. Animals are predominantly fed on domestic waste, supplemented with concentrates and good quality by-products like groundnut or green bean by-products. Grasses from horticultural farms are also given to the urban-based ruminants. These feed resources are not enough and animals scavenge freely in the towns. Within this urban family based system there are a few sheep-fat-tening and intensive poultry farms which produce livestock especially for sale at religious events.

#### THE SUB-URBAN SYSTEM

The sub-urban area is characterised by a wide range of production sites. Three sub-systems can be distinguished, according to soil type, topography and water availability: Dior, Niayes and N'Diouky.

The *Dior Sub-System* predominates in the sand dunes, which cover 70% of the Niayes area. The major part of the Dakar dairy belt is located in the Dior. Poultry farming (meat and egg production) is present, as are orchards and flower production.

The *Niayes Sub-System* is found in the inter-dune depressions. Niayes is not a suitable area for livestock due to high parasite load and animal diseases. The *N'Diouky Sub-System* located in depressions as well as in the dried lakes, is characterised by the presence of market gar-

dening, but livestock is not yet very well developed.

Integrated systems predominate in the sub-urban system, with about 97% of the farmers being agro-pastoral (Fall et al., 1993). The mean farm size is 4.5 ha, while 83% of the farms are less than 3 ha, and only 8% are more than 10 ha. About 72% of the properties are owned, while 27% are on communal lands. The average herd size is 5 sheep, 32 cattle, 25 goats, 2 horses, 1 donkey and 48 poultry per household (Fall et al., 1993). Feeding is based on crop residues and agro-industrial by-products from Dakar.

#### Trends and constraints

Intensification is an observed trend, which is mainly due to space constraints. Livestock is particularly affected by this intensification, as pasture areas in the sub-urban system are declining. Another trend is that traditional production systems are rapidly modernising. This has led to an increase in animal survival rate and performances. Water management is a key constraint as natural watering points are only available to grazing herds

during and after the rainy season. Livestock therefore competes with horticulture and households for running water. Major farm products are meat, milk, poultry, hide and skin and honey. There is a more diversified production in the Niayes sub-system compared with other the sites. The choice of farm products is dictated by soil type, climate and farm size (see Table 1).

Economic constraints compromise the present and future sustainability of intensive milk and poultry production. Urban markets are not sufficient to sustain livestock production in the city. New institutional orientations, involving clear options in local market protection and better input availability are expected to consolidate the milk production belt and poultry production in the Niayes.

#### OPPORTUNITIES AND CHALLENGES FACING URBAN LIVESTOCK PRODUCTION SYSTEMS

Livestock in the Niayes zone is one the activities which has been identified by policy makers to be stimulated in order to improve urban employment opportunities and food



Roaming sheep in Bolgatanga

Photo by S.Y. Apiga

Table 1: Production profile in urban and peri-urban systems

SYSTEM	PRODUCTS
<b>Urban system</b>	<p><i>Small ruminant meat</i></p> <p><i>Small-scale poultry production (meat and eggs)</i></p> <p><i>Hide and skin (from slaughterhouse)</i></p>
<b>Peri-urban systems</b>	
<i>Dior sub-system</i>	<p><i>Dairy industrial (milk and cheese)</i></p> <p><i>Dairy traditional (milk, butter and cheese)</i></p> <p><i>Poultry industrial (meat and eggs)</i></p> <p><i>Beef</i></p> <p><i>Small scale rabbit and turkey production</i></p>
<i>Niayes sub-system</i>	<i>Small ruminant and small scale poultry production</i>

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security. Citizens look upon the expansion of livestock in the city and the sub-urban areas as an activity that enhances family life.

### Opportunities

Urban livestock in Dakar accounts for 3% of small ruminants, 1% of cattle and 30% of poultry production (Direl, 1998). Currently, 7% of the total cattle and 4% of small ruminants in Senegal are located in the Thiès region. Poultry is the most important activity of the zone, involving some 70,000 entrepreneurs. Poultry and milk production in particular are favoured for their marketing potential and contribution to income generation. However, further livestock expansion is constrained by lack of space and feed resources. Grassland development in the

## Land tenure is a major constraint to further expansion of livestock

sub-urban system seems to be a promising way to support the increasing intensification. Cattle and sheep fattening is on the increase in all administrative regions of the Niayes zone. Non-conventional species like rabbit, ostrich, pigeon and turkey are also being raised under the diversification process.

In the sub-urban areas, there is a wide spectrum of farm types, with around 85% being small-scale enterprises. Livestock intensification in dairy and poultry industries is a current trend with emphasis on the improvement of livestock production techniques, like cross-breeding. However, the profitability of intensive livestock systems is still questionable as market limitations compromise economic sustainability. Feed resources are very scarce; grasslands are not well developed in the Niayes due to space constraints, as land is allocated for housing or horticulture around main cities. See Table 2 for an overview of constraints and opportunities.

Integration of livestock with horticulture is risky as pesticides and chemical fertilis-

**Table 2: Constraints and opportunities in different livestock systems**

SYSTEM	Constraints	Opportunities
<b>Urban system</b>	<ul style="list-style-type: none"> <li>Poor space availability</li> <li>Waste management</li> <li>Poor organisation of farmers</li> <li>Lack of credit</li> </ul>	<ul style="list-style-type: none"> <li>Marketing</li> <li>Good climatic conditions</li> <li>Availability of wastes for recycling</li> </ul>
<b>Peri-urban systems</b>		
<i>Dior</i>	<ul style="list-style-type: none"> <li>Low soil fertility</li> <li>Poor access to inputs (seeds, fertilisers and pesticides)</li> <li>Poor water availability</li> <li>Poor organisation of farmers</li> <li>Lack of credit</li> <li>Lack of feed resources</li> </ul>	<ul style="list-style-type: none"> <li>Space</li> <li>Market</li> <li>Good climatic conditions</li> <li>Availability of horticultural by-products for recycling</li> <li>Forage cropping</li> </ul>
<i>Niayes</i>	<ul style="list-style-type: none"> <li>High humidity stimulating parasites</li> <li>Poor space availability</li> </ul>	<ul style="list-style-type: none"> <li>Good soil fertility</li> <li>Water available</li> </ul>
<i>N'Diouky</i>	<ul style="list-style-type: none"> <li>High humidity stimulating parasites</li> </ul>	<ul style="list-style-type: none"> <li>Good soil fertility</li> </ul>

ers are generally used by farmers without respect to withdrawal time, resulting in high chemical residues in underground and surface water as well as in crop by-products (Fall et al., 2000).

### Farmers' organisation

To facilitate access to credit and livestock inputs in urban and sub-urban systems, farmers are organised in economic interest groups. Various initiatives have been developed in different regions of the Niayes, and Thiès has up to 123 such groups. These organisations are a tentative response to poor government assistance which in the past has left the producer open to the rough realities of the market. Government support for the stimulation of self-management in urban agriculture systems should be encouraged.

### Structural constraints in the urban livestock system

The land tenure system is a major constraint to further expansion of livestock in the urban areas of the Niayes. Human housing and welfare are given priority in land allocation. Other constraints are salinity of the soil and poor access to land. These constraints especially limit young and poor people.

Several research centres near the production sites offer technical assistance to farmers trying to modernise. Research focuses on genetic improvement of local breeds by artificial insemination or

embryo transfer, improvement of animal feed, based on locally available resources (for milk, meat and poultry production) and prevention and treatment of the main diseases. Milk and meat processing trials are currently being carried out in Thiès.

Development of the livestock system also requires improvements to the distribution network. It is advantageous to base all technologies on locally available resources, but good collection and distribution systems also require the appropriate decisions at both the political and farm level.

### CONCLUSION

Despite climatic and land tenure constraints, urban agriculture is an important sector in the major cities in Senegal. Not all stakeholders may favour the development of urban livestock, as it competes with "regular" urbanisation for space.

The growing population and subsequent space constraints, however, seem to find a balance in the dynamics of the whole system. The potential of urban livestock to contribute to food security and income generation suggests that animal agriculture should not be marginalized. However, the development of the urban and sub-urban livestock sector can only be achieved by overcoming economic and environmental constraints.