The status of urban and peri-urban agriculture (UPA) in Khartoum State, Sudan

Introduction

Khartoum, the capital of Sudan, is located at the confluence of the Blue Nile and White Nile (Fig. 1). The city has grown rapidly in recent years and today has an estimated population of 7 million people including 2 million refugees. Khartoum is located in the semi-arid savanna belt of the Sudan, with an average annual rainfall of 100-200 mm and a long dry season from September to June (Fig. 2). A wide range of production systems can be found ranging from household subsistence to large-scale commercial farming. Crops grown in Khartoum state comprise a long list of vegetables, fruit trees, medicinal and aromatic plants and field crops. In addition, intensive livestock production systems for milk, meat, and poultry are operational within and around Khartoum city.

Agricultural Production

Khartoum state with its unique position at the confluence of the Blue and White Niles represents an ideal location for food production, which is fully oriented to satisfy urban demands:
- Crop production is practiced on 77000 ha in winter season 2005-06.
- About 54% of this area is in urban part of the state.
- Major crop production in the peri-urban area comes from large private and cooperative schemes.
- As seen in Fig. 8, the biggest share of the cultivated area in season 2005-06 was allotted to fodder crops (55%), followed by vegetables (27.4%), fruits (6.4%), field crops (3.2) and spices (1.3%).

Self-sufficiency ratios:
- Vegetables were often produced in surplus (Table 1).
- Some products, such as milk and eggs reached a high self-sufficiency ratio, 92% and 94%, respectively.
- Other products, such as poultry meat and fish meat could reach a moderate level of self-sufficiency, 78% and 64%, respectively.
- Fruits reached a self-sufficiency ratio of 36%.

Research Gaps
- There is a lack of quantitative information on UPA. Previous studies are fragmented and of limited spatial and temporal scope.
- A deeper understanding of the practices, motives, problems and policy implications in UPA is needed.
- Research should identify characteristics of urban farmers, their gender, age, socio-economic status and level of education.
- Additionally, the research should reveal how these factors influence crop choice, field size, method of acquiring land, quantity of produce and the gender role.
- Research is needed to quantify nutrient flows in existing urban farming systems.

Institutional Partnership

A collaborative research project between the Agricultural Research Corporation (Sudan) and the University of Kassel will be launched to address the above-mentioned questions. The project is supported by the Alexander von Humboldt Foundation within the framework of a partnership between the two institutions.

The project aims, through research and capacity building, to characterize nutrient flow in an urban farming system (Tuti Island) of Khartoum (Fig. 10 and 11). It is expected that results from this project will contribute significantly to sustainable land management.

Table 1. Self-sufficiency ratios for various agricultural products in season 2005-06.

<table>
<thead>
<tr>
<th>Product</th>
<th>Consumption (ton)</th>
<th>Production (ton)</th>
<th>Self-sufficiency ratio (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetables</td>
<td>769 950</td>
<td>10 447 500</td>
<td>136</td>
</tr>
<tr>
<td>Fruits</td>
<td>413 750</td>
<td>173 537</td>
<td>36</td>
</tr>
<tr>
<td>Fodders</td>
<td>30 177 500</td>
<td>20 446 675</td>
<td>68</td>
</tr>
<tr>
<td>Milk</td>
<td>459 760</td>
<td>458 084</td>
<td>92</td>
</tr>
<tr>
<td>Red meat</td>
<td>143 100</td>
<td>143 024</td>
<td>102</td>
</tr>
<tr>
<td>Fish</td>
<td>140 750</td>
<td>91 450</td>
<td>64</td>
</tr>
<tr>
<td>Poultry meat</td>
<td>140 750</td>
<td>110 555</td>
<td>78</td>
</tr>
<tr>
<td>Eggs</td>
<td>118 000</td>
<td>111 210</td>
<td>94</td>
</tr>
</tbody>
</table>

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