LA PAZ: URBAN AGRICULTURE IN HARSH ECOLOGICAL CONDITIONS

Petra Kreinecker

1. Introduction

The republic of Bolivia is one of two landlocked countries on the American continent. The Andes in the west of the country covers 40% of the country. The Bolivian Andes can be divided into two mountain ranges: the Western (Cordillera Occidental) and the Eastern Range (Cordillera Oriental). These include the highlands of Altiplano at 3,000-4,500 m above sea level (a.s.l.).

Administratively, the country is divided into nine departments and subdivided into 98 provinces. La Paz is the capital of the Department of Murillo, the seat of the Bolivian Government and effectively the capital of the country. Constitutionally, however, Sucre is Bolivia’s capital (Munzinger Archiv 1993). La Paz is situated at 3,600-3,800 m a.s.l., while the gigantic suburb El Alto, meaning the high city, is located at 4,000-4,100 m. La Paz lies in a basin with suburbs spreading into the surrounding hills and mountains.

Since the land reform of 1952, an enormous migration from the Altiplano to La Paz started, which even increased after the drought of 1984. As a result, El Alto expanded rapidly. The huge suburb has had an autonomous administration since 1989, but El Alto and La Paz are still strongly interdependent. In this case study, La Paz and El Alto are treated as one heterogeneous unit, taking into account their parallel urbanisation (MOPU 1990). The character of the Andean metropolis is determined by a multitude of ethnic cultures, their languages and social differences.

The climate of La Paz is strongly influenced by the extreme altitude of the city. Temperature fluctuations between day and night can be as much as 20°C. The average annual temperature does not exceed 10°C, with the exception of the lower southern part of downtown La Paz (Statistisches Bundesamt 1991).

La Paz has a semiarid climate with a long dry season. The intense sun at this high altitude dries the earth and turns it into a crusty and salty surface. The Bolivian
summer has a short rainy season (December-March) with annual precipitation between 550 and 800 mm (Arze & Weeda 1996). El Alto is cold (17 to -4°C) and windy. The average wind speed is 67 km/h. The temperature differences between El Alto and the lower parts of the city can be as much as 10°C during the day (Sandoval & Sostres 1989). La Paz/El Alto is thus one of the urban metropoles in the world with the largest climatic differences within one city (Schoop 1981).

In 1997, La Paz had between 1.3 (1992 census) and 1.5 million inhabitants (INE 1997), with an average annual growth rate of 1.78% (Ministerio de Planamiento y Coordinación 1992). The growth rate of El Alto stands much higher at 9.23 % (INE 1997), with an immigration rate of more than 40% (Prudencio Böhrt 1995). The population of El Alto is expected to grow to 1,049,176 inhabitants by the year 2000 (UN 1991). The population density of La Paz in 1992 was 246 inhabitants/km² (INE 1997), whereas El Alto recorded in 1988 only 59 inhabitants/km² (UN 1991).

The more difficult it became to find a place in La Paz, the more the settlements expanded to El Alto. Parallel to the migration from the Altiplano to La Paz, the children of the first generation of migrants left the city centre of La Paz for El Alto in search of cheaper places to live (Valdés 1997, Ströbele-Gregor 1990).

El Alto is marked by openly visible misery. In 1997, 72.9% of households were living below the poverty line (Ministerio de Planamiento y Coordinación 1992). For Ströbele-Gregor (1994), El Alto is a "symbol for the ugly sides of the so-called Third World’s capitalism and modernisation, but also for creativity and vitality". The official unemployment rate in La Paz is 5%, in El Alto 4% (INE 1997). La Paz is also referred to as “the city of contrast” (Bruns 1994).

Sixty-five percent of El Alto's inhabitants maintain a close relation with their village of origin, and 10% are somehow connected to rural agriculture. Organising their lives in an urban context, the migrants rely on a mixed economy and a complex social network. They are linked to their compadres, based on Andean reciprocity. Within the network, labour, goods and mutual support are exchanged, a generations-old custom. Temporary migrants may also count on the help of their compadres. In exchange, the latter receive products from the Altiplano and go back to the village to help with the harvest or to collect their share (Kreinecker 1996, Sandoval 1994, Sandoval & Sostres 1989).
Carpas solares from CASOL. (Picture Petra Kreinecker).

Maize production at Avenida Kantutani, La Paz (Picture Petra Kreinecker).
"It should not be overlooked that this type of economy, based on social networks and characterised by a combination of different activities, social forms of work organisation and the exchange of labour and goods, has its origin in Andean rural economy, socio-political forms of organisation of the village community and – not the least - in a religious conception of the world and the pertaining system of norms and values" (Ströbele-Gregor 1990).

2. Ongoing urban agriculture

According to the INE (1997), 3,970 persons in La Paz and 1,975 in El Alto formally worked in the agricultural sector in November 1997. In June 1996, this figure was still 4,482 for La Paz and 3,474 for El Alto. In the informal sector (70% of the national economy, Alvarez 1999), 4,148 persons in El Alto and 3,474 in La Paz worked in agricultural production (INE 1997). Of La Paz’s total area, 2,950 ha are used for agriculture (see Table 1). It is estimated that almost 30% of La Paz’s agricultural requirements is produced in urban agriculture (HAM 1992).

Table 1: Urban agricultural area and consumption of easily perishable crops

<table>
<thead>
<tr>
<th>City area of La Paz</th>
<th>Agricultural area (ha)</th>
<th>% of consumption of easily perishable crops</th>
<th>Estimated consumption in La Paz (tons/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>West</td>
<td>1,250</td>
<td>14.60</td>
<td>3,307</td>
</tr>
<tr>
<td>North</td>
<td>100</td>
<td>0.04</td>
<td>265</td>
</tr>
<tr>
<td>East</td>
<td>400</td>
<td>0.15</td>
<td>794</td>
</tr>
<tr>
<td>South</td>
<td>1,200</td>
<td>13.50</td>
<td>3,175</td>
</tr>
<tr>
<td>Total:</td>
<td>2,950</td>
<td></td>
<td>7,540</td>
</tr>
</tbody>
</table>

Source: HAM 1992 and own calculations

Urban agriculture exists in every corner, near the centre as well as on the outskirts of the city. Every inhabitant of the poor quarters knows what is behind the high clay walls. Hen-cackling and the grunting of pigs is everywhere. However, if you would ask officials about urban agriculture, they will shake their heads, or some will smile with pity. The secretary-general of El Alto's municipal government confirmed that "something like that" does not exist in El Alto, while he passed by sheep grazing at the roadside. A representative of a church organisation assured that one does not find agriculture in the city. Nevertheless, opposite his office is a greenhouse in a courtyard.
“Urban Agriculture” is a technical term used by the few experts or NGO representatives who support urban agriculture in projects. The city farmers themselves neither use this term, nor do they understand it as a concept.

### 2.1 Coping with difficult conditions

Urban agriculture in La Paz and El Alto means primarily growing vegetables. While co-operatives also grow for the market, one will find that mainly traditional vegetables are grown in backyards. In addition, small animals are kept, mainly for subsistence reasons.

The destructive forces of the local climate determine agricultural production. The growing seasons are short, and plants need protection from the cold and wind. Irrigation in spring, autumn and winter is essential. Water supply is one of the biggest difficulties faced by city farmers.

Whereas the co-operative CASOL\(^2\) and the producers' association in Achocalla have to pay for expensive potable water from the public water supply, the Municipal Office (Alcaldía), waters its trees with well water\(^3\). The women’s association Bartolina Sisa obtains its water with a diesel pump from a 60 m deep well all year round (Jahn 1999). The farmers in the south of the city use water from the highly contaminated Río Choqueyapu (HAM 1992). Private households use water from the public water supply, if they are connected, and rainwater in the wet season\(^4\). Only one sprinkler system was found, in Santa Cecilia, a home for blind women.

The heavy clay soils of the city are not very fertile (Jahn 1999). Different practices are commonly used to preserve the soil fertility and without which no agricultural use would be possible. Besides animal manure, also kitchen waste, ashes, sand, lime and similar everyday products are also used as fertilisers (Jahn 1999). The cold and dry conditions limit the natural production of compost and make it a lengthy process. Often, unfinished compost is used. In El Alto, compost heaps can be found in greenhouses or in dugout holes to accelerate composting.

### 2.2 Urban farming systems

Agricultural production takes place on open fields and in private home gardens. Native crops like potatoes, beans and maize, which are adapted to the local conditions, are
grown. Sometimes, one might find wooden fences (semi-sombra) sheltering potato and bean crops from wind and sun. Occasionally, one can find a small quinoa field. Pharmaceutical plants and spices are also integrated into the system. More rarely, vegetables or fruit are grown. These plants are not part of the traditional diet, and "no se sabe comer" (one doesn’t know how to eat them).

In the communal gardens (huertos comunitarios), however, plants are protected from the harsh climate. Greenhouses and beds covered with plastic hoods (carpas solares) predominate. The sizes of greenhouses differ according to the size of the plot. The roof construction is either double glass, which allows more sunlight to penetrate, or the much cheaper polyethylene (Bourliaud et al. 1997). Both methods protect against the torrential rains, hail, cold and night frosts, and provide the microclimate necessary for a diversified production and prolonged growing season (Bourliaud et al. 1997, Prudencio Böhrt 1996). The construction of plastic hoods is simpler and cheaper, but also more transitory; they enable production in plant furrows mainly used to grow salad and vegetables. In the CASOL co-operative, a plastic hood (0.9 x 3.5 m) covers five furrows, in which 8-12 different crops are grown.

To protect crops in the first growing stages, covered nursery beds are used (camas protegidas). Jahn (1999) mentions a cover of Ichu-grass, a straw-like material. The specific microclimate and extra protection of these seedbeds is the basis for the huge variety of crops found in these gardens (Bourliaud et al. 1997).

Different things are tried to create more favourable growing conditions. The CASOL co-operative in Villa Tejada tried to use the greenhouse microclimate to grow mushrooms. Very big ventilation slots were built into the wall, which were supposed to improve the exchange of warm and cold air. This did not function properly, and consequently was not adopted by the women involved in the co-operative.

A large variety of animals are kept: chickens, ducks, guinea pigs, rabbits, pigs, even sheep and here and there the odd cow or two. Usually, poultry runs free in the inner courtyards. Guinea pigs and rabbits are kept in wooden crates or small fenced areas. Pigs, cows and sheep scavenge in public areas, roadsides, green strips or on vacant lots.
The domestic gardens are very small, on average 8-30 m$^2$. Officially, they are not regarded as agricultural production areas. The production of these gardens at first appears rather chaotic; nevertheless, there seems to be a plan and certainly a lot of knowledge behind their set-up. The trees in private gardens are first of all planted for aesthetic reasons, for shade or for their fruit (Arze & Weeda 1996).

Urban agriculture in La Paz and El Alto is characterised by low inputs of capital, fossil energy and chemical pesticides and by high labour intensity. Production is often organic. None of the projects and households studied used chemical pesticides or fertilisers.

Land titles are often unclear. Cultivating vacant plots is allowed, as long as the land is not needed for other purposes. Livestock is only tolerated. For example, the land titles of the CASOL co-operative seemed clear, after the NGO Ricerca e Cooperazione obtained land titles during the first phase of the project. At present, however, there is a legal battle running with the heirs of the former landowners. The worthless waste dump, which was sold, had regained its value through cultivation, and now the owners try to reclaim the land.

Trees for reforestation and flowers for planting in the plazas are grown by the government in tree nurseries at different sites in El Alto and Achocalla. Under the supervision of an agricultural engineer, tree seedlings are sown, raised and planted by the employees, mostly women. The women who work here make use of the greenhouses for growing salad and strawberries on their own account.

3. Urban farmers and their organisation

The majority of city farmers in La Paz and El Alto are marginalised women (Mejia 1996b, Prudencio Böhrt 1996, SEMTA 1995). The majority of the female city-farmers are migrants, primarily ethnic Aymara; their agricultural knowledge is based on a long tradition of farming. Farming is thus also a way to keep their heritage alive. Many are illiterate, most of them without means, many of them are housekeepers and thus the breadwinners of their families (Prudencio Böhrt 1996). In the case of CASOL, 60% of the members are migrant women from the Altiplano, 25% coming from the mining regions after the closing down of the state mines, the remaining 15% are women who moved from La Paz (Valdés 1997).
Often the producers are organised in co-operatives, associations etc. CASOL, with its 58 female equal partners, is an interesting example. Every six months, responsibilities are rotated in the organisation. An elected board runs the organisation, supported by the APC (Administración, Producción y Comercialización). The two executives of the board are elected for a period of two years⁹ (Prudencio Böhrt 1996, Prudencio Böhrt 1995).

Also in the home for the blind, Santa Cecilia, urban agriculture means more than just the production of food. Blind campesinas from the rural areas of the surrounding departments come here to stay for some months. Here, they learn to deal with their handicap. With the aid of agricultural students from the Catholic University, they are taught how to perform agricultural tasks independently.

There are very few small businesses or enterprises that have developed from urban agriculture. A successful exception¹⁰ is Ventilla, a small vegetable production enterprise in El Alto. According to Mejia (1996b) the supermarket chain ZATT has concrete plans to build greenhouses in co-operation with Ventilla near the city centre, to provide hygienically grown vegetables for their stores, which is often requested by customers who are used to the North American standard of other stores.

The women farmers of Achocalla founded an association to allow them to reduce the high costs of marketing their produce (SEMTA 1998). For the long term, they are seeking a joint venture with the ZATT and KETAL supermarkets. They do not expect too much from these negotiations, until they have received official ecological certification of their produce¹¹.

4. Role of urban agriculture for urban food security, nutrition and health

Families in La Paz spend between 52% and 83% of their income on food (Prudencio Böhrt 1995).

The partners of CASOL produce only 1.7% their energy intake. Thus, despite the rather large area of arable land for staple foods, urban agriculture contributes little to the food energy supply.
Urban subsistence production increases the diversity of foods, as all women interviewed pointed out. A comparison of the CASOL women’s food basket to that of non-farming women showed that the consumption of vegetables in socio-economically comparable households without self-production is less varied and mostly confined to carrots and onions (Prudencio Böhrt 1995).

Poultry kept in the yards guarantee the supply of protein and energy at a price that even families with few resources can afford (Wieman & Leal 1998).

According to some sources, the contribution of urban agriculture to food security could be higher, but the loss of indigenous knowledge or the incapability to adapt this knowledge to the urban environment leads to poor storage and processing techniques, which increase post-harvest losses.

The availability of water is insufficient, and untreated or contaminated water is often used. This leads to the spread of infectious diseases (Acebey 1996). The inappropriate disposal of waste leads to additional sources of infection. At least 20% of organic waste is dumped in the rivers or valley gorges. Soils and wells are often contaminated with lead and sulphuric acid. Rubbish piles up at empty sites, on the plaza or at the roadside. Food sold in the markets or by the roadside shows a high degree of chemical contamination (Mejia 1996a). However, reliable data identifying the source of contamination are not available.

In the first half of 1998, the City Government of La Paz started a “pig campaign”. All domestic pigs in city territory were captured and killed. There was reason to suggest that part of the domestic pigs were infested with trichina (Trichinella spiralis), which led to the complete extinction of pigs in the city.

5. Urban agriculture and the urban environment

Apart from the non-existent political responsibility, the climatic and geographic peculiarity of the city and the urbanisation rapidly deteriorates the city's ecological situation (Cardona et al. 1992). A lack of basic sanitation and the carefree exploitation of the few available resources, especially in semi-urban areas, are just two factors responsible for the further degradation of the environment (Acebey 1996). In La Paz, poverty is frequently identified as a factor in environmental destruction. The conclusion "the poor pollute the environment" is neither correct nor useful to
understand the social dimension of ecology. Poverty and environment do not have an inverse relation; they rather can be regarded as parallel effects of the same unsuccessful globalisation process (MOPU 1990).

The still existing original vegetation in El Alto looks like "degraded relics" (Cardona et al. 1992). At the beginning of urbanisation, meadows were still protected as arable land and trees for firewood. The massive migration effectively did away with this.

One of the biggest problems is the contamination of rivers, 180 (!) surface and underground rivers and creeks run cross the city (Acebey 1996). UN studies found extremely high concentrations of heavy metals in the Río Seco. Mercury has also been found in water. The Orkojahuira River, which runs in the east of the city, drains untreated wastewater from the city hospitals. Contamination by chemical fertilisers or pesticides from urban agriculture can be excluded, as the farmers do not apply chemicals.

The Institute for Ecology of La Paz (Instituto de Ecología) conducted an inventory of trees in the city. In La Paz, trees fulfil important ecological functions in the urban metabolism (Arze & Weeda 1996). They clean the air, retain moisture and increase the humidity of the surrounding air. Trees markedly influence the climate in La Paz. They especially raise the humidity, and they control wind movements, guiding and channelling them. The network structure of the roots strengthens the soil structure and thus prevents soil erosion. The canopy and the leaves on the earth temper splashing rains and prevent the drying-up of the soil caused by the strong UV radiation at this altitude. The leaves preserve the soil’s humidity and organic matter from wind and water erosion.

6. Contribution to the household economy

"The concept of migration does not include agriculture, as the migrants have broken with their origins and thus with their rural identity”, says Caritas’ representative in La Paz. “It simply is not worth its while...” resumes a representative of the Institute for Ecology, “when a family of four has only 40-50 bs/month\textsuperscript{15} to spend on vegetables, it simply does not reward all the effort to grow food in the city” - at least for a middle-class family. Nevertheless, families in poor quarters do grow food, even when many experts have their doubts on the economic profitability from a western point of view.
Beyond a monetary income of often only a few dollars per month, especially subsistence production in communal or individual private gardens makes a considerable contribution in kind to the household economy. Subsistence production reduces household expenditure for foodstuffs, which on average amount to 52-83% of the income in La Paz (Prudencio Böhrt 1995). Table 2 gives an example of the income share obtained from urban agriculture. The woman, a CASOL employee, who in addition cultivates her private garden, contributes 67% of the total household income. Her share is almost exclusively obtained from urban agriculture.

Table 2: Household earnings per household member

<table>
<thead>
<tr>
<th>Family member</th>
<th>Job</th>
<th>Earnings in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Husband</td>
<td>Mine-worker, chauffeur</td>
<td>5</td>
</tr>
<tr>
<td>Wife</td>
<td>Employee at CASOL, salesperson, weaver</td>
<td>67</td>
</tr>
<tr>
<td>Daughter</td>
<td>Teacher</td>
<td>28</td>
</tr>
</tbody>
</table>

Source: Prudencio Böhrt 1995

The other CASOL women work four hours per week (2 full days/month) in the communal gardens, for which they receive about US$ 4.30. Though the monetary share seems small, most important is the non-monetary income.

7. Gender aspects of urban agriculture

Women play a central role in urban agriculture in La Paz and the economy. Paid work influences women’s lives in two ways. They have access to and frequently also control over money; it enhances their social and domestic status, and they gain the freedom and power for decision-making. On the other hand, it also increases their dependence on a money economy on which they have no influence.

Experience shows that women constitute a valuable resource for the city and have to be regarded as the most active and effective social group (Mejia 1996a). “It is not a new phenomenon that women function as catalysts for their families in periods of economic crises. The women are the guarantors of the families’ subsistence production, developing the most different activities”, explains Valdés (1997) referring to the situation in El Alto.
Traditionally, however, the role of women is confined to the domestic, non-public area of doing unpaid house and reproductive work (Prudencio Böhrt 1996). This could be a reason for fewer women engaging in communal fields and greenhouses. Women working in home gardens situated in the immediate vicinity of the house are culturally accepted.

The women’s decision to work at the CASOL co-operative was, in most cases, taken against the will of their husbands (and their children). The families were concerned that the work in the communal gardens would leave the women less time for their children, their husband and household tasks, while the money earned seemed too little. Another reason men gave for opposing their wives’ joining the co-operative was that the women had to lower themselves to sell vegetables (Prudencio Böhrt 1995). However, the experience since 1992 shows that the common production has had positive effects on the socialisation and empowerment of women. For about 90% of the women, this is a reason for their continued work in the co-operative (Valdés 1997). The women have changed through the compulsory active participation in the co-operative’s functions. They have learned to overcome their reserve and they have lost their fear to speak out in the group. Apart from the work-related knowledge, they are better informed on politics and the current political and socio-economic situation.

A growing independence of women in the urban context and the related change in traditional roles are cited by a woman in Cota Cota as probable reasons why her husband left her after she had begun to get more involved in subsistence agricultural production16.

8. Existing policies regarding urban agriculture

In the last years, the increased national and international pressure on the Bolivian Government has led to more attention to environmental protection. In 1992, the environment action plan was prepared which, together with the establishment of the environment fund, laid the basis for political action. In 1993, the government of "Goni" Gonzales Sanchez de Lozada passed the Ley de Participación17, a reform programme for people’s participation; a unique law for Latin America which, for the first time in Bolivia's history, took account of its multiethnic and multilingual society. Within the reform process, the status of the environmental sector was enhanced: the Ministry for Sustainable Development was founded. The municipality of La Paz is beginning to define something like an environmental policy (Prudencio Böhrt 1996).
The new laws and institutions indicate that changes are in the air. PADUM (Proyecto de Asesoramiento al Desarrollo Urbano de la Alcaldía de La Paz), a project financed by the United Nations and the World Bank, is elaborating a first development plan for the city.

Formally, there is no urban agriculture in La Paz or El Alto. Therefore, no relevant guidelines or strategy papers have been developed.

9. Factors hampering the development of urban agriculture in La Paz

Organisations that do work on urban agriculture mention different factors that negatively influence the development of urban agriculture in La Paz and El Alto:

- the cultural heterogeneity of a group limits the communal production, as migrant women often have knowledge only about Andean plants or no agricultural knowledge at all (Valdés 1997). The majority of the women are illiterate which, according to Valdés (1997), is a further complicating factor for applying new cultivation methods or adapting new technologies;

- the ecological situation of the rivers and the high prices for drinking water, particularly in Achocalla (SEMTA 1995) and in Rio Abajo (HAM 1992), threaten not just the living conditions of the agriculturally-active city population but also planned urban agricultural initiatives;

- climatic conditions: the short growing season limits the possibilities of urban agriculture and leads to higher production costs;

- uncertain land tenure and a lack of arable land and grazing land;

- scarcely available water for irrigation;

- individual subsistence farmers producing in private gardens are, to a large extent, excluded from financial, technical and material assistance. They do not have enough capital to invest in techniques adapted to the urban environment. This is one reason why they would rather grow staples than salad and vegetables, although the latter have higher returns per square meter; and

- lack of legislation and unclear responsibilities are seen as an important reason for concern, as these keep urban agriculture outside the necessary legal framework and push the activities into illegality. A clear example is the above-mentioned pig eradication campaign.
10. Perspectives for developing urban agriculture in La Paz

Urban agriculture in La Paz can be positively assessed as a survival strategy of socially marginalised people, mostly women, who are trying to improve their families’ situation. Mejia (1996a) hopes that the new environmental law (*Ley de Medio Ambiente*) will improve the political framework. In his opinion, this law has a pivotal role and he suggests that a systematic spreading may have spontaneous followers which will increase the pressure on the politically responsible.

In La Paz, four main actors in urban agriculture can be identified: municipalities, NGOs (national or international), local initiatives of urban producers, and their organisations. Accordingly, there are different levels for devising future strategies.

A future strategy on a political level has not only to clarify the land-title situation in favour of the city farmers; it must also protect existing agricultural areas from further destruction by urban sprawl. The perspectives for urban agriculture should not depend on the government’s goodwill. Local government should support existing local initiatives to strengthen existing groups of farmers.

A future strategy must strengthen the further development of technologies and cultivation practices. Numerous interviews made it clear, however, that projects are doomed to failure if inappropriate technologies are forced upon producers. Technology development should be participatory and take local conditions into account.

In the words of the director of PROA\(^{18}\): “A future strategy will have to emphasise research on existing structures and on socially accepted Andean varieties, if one is to improve the situation of marginalised people whose nutrition is endangered.”
1 Aymara, Quechua, Spanish and another European, American and Asian languages.
2 Cooperativa Agrícola de Comercialización Solidaridad. According to the president of CASOL (February 1999), irrigation costs about 800 bs/month (US$ 143) and is one of the highest expenses of the cooperative.
3 According to the director of the nursery Villa Tunar (February 1999).
4 Own survey (January/February 1999).
5 According to M. Pacheco, Executive Director of PROA (17.02.99).
6 The size of the greenhouses varies between 10 m$^2$ (Santa Cecilia) and 163 m$^2$ (CASOL).
7 Information from the president of CASOL (February 1999).
8 Plazas are rectangular squares, usually with a small park area. On numerous excursions and transect walks during the rainy season, I never found a green or flowering plaza in El Alto. According to the representative of the Alcaldía, this is because the local population is not interested. "Así es nuestra gente, no cuiden las cosas" (our people are like that, they don’t take care).
9 The Italian NGO Ricerca e Cooperazione pays the salaries of 250 bs/month for both women.
10 According to Mr Pacheco, Executive Director of PROA (Centro de Servicios Integrados para el Desarrollo Urbano), February 1999.
11 Oral communication of R. Valverde, SEMTA (February 1999).
12 Personal interviews (February 1999).
13 Personal communication, Director of State Home for the Blind and a NGO representative (1999).
14 Personal communication of the Secretary of AGUILA, J. Prudencio Böhrt (February 1999).
15 About US$ 7-9. The diet of Bolivian middle-class families contains very few vegetables.
16 Personal interviews (February 1999).
17 Important functions of the state were decentralised to the 296 municipalities, and the municipal annual budget was significantly increased.
18 Personal communication, Director of PROA (February 1999).
References


Sandoval CJ. 1994. Proyecto de huertos comunitarios. La Paz


### Appendix 1: Urban agricultural activities in La Paz and El Alto

#### Overview of communal garden initiatives

<table>
<thead>
<tr>
<th>District</th>
<th>Organisation</th>
<th>Form of organisation</th>
<th>Producers</th>
<th>Technology</th>
<th>Production</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achocalla</td>
<td>Asociación de Productores de Achocalla</td>
<td>Co-operative</td>
<td>Women</td>
<td>Greenhouse, <em>Camas protegidas</em>, plastic hoods</td>
<td>Vegetables, potatoes, medicinal herbs, guinea pigs</td>
<td>Sale, subsistence</td>
</tr>
<tr>
<td>Villa Mercedario</td>
<td>Asociación de Mujeres Bartolina Sisa</td>
<td>Women's organisation</td>
<td>Women</td>
<td>Greenhouse, <em>Camas protegidas</em>, open field</td>
<td>Vegetables, potatoes, cereals, flowers, sheep</td>
<td>Subsistence</td>
</tr>
<tr>
<td>Villa Tunari Santiago I. Achocalla</td>
<td>Tree Nursery of Municipality of Alto</td>
<td>Governmental</td>
<td>Women</td>
<td>Greenhouse, tree nursery</td>
<td>Trees</td>
<td>Reforestation, planting of public areas</td>
</tr>
<tr>
<td>El Alto</td>
<td>Casa Waki</td>
<td>?</td>
<td>Street children</td>
<td>?</td>
<td>Trees</td>
<td>Reforestation</td>
</tr>
<tr>
<td>Villa Tejada Santa Rosa</td>
<td>CASOL</td>
<td>Women's Co-operative</td>
<td>Women</td>
<td>Greenhouses, plastic hoods</td>
<td>Vegetables, trees, herbs, flowers, strawberries</td>
<td>Sale, subsistence</td>
</tr>
<tr>
<td>Villa Tajada</td>
<td>Don Bosco Convent Garden of Salesian Brothers</td>
<td>Monks</td>
<td>Greenhouses, garden, rabbit hutch, chicken coop</td>
<td>Vegetables, chickens, rabbits, pines</td>
<td>Subsistence</td>
<td></td>
</tr>
<tr>
<td>Pasankeri</td>
<td>Tree Nursery “Club de Madre”</td>
<td>Women</td>
<td>Tree nursery</td>
<td>Trees</td>
<td>Reforestation</td>
<td></td>
</tr>
<tr>
<td>El Alto</td>
<td>Military</td>
<td>-</td>
<td>Soldiers</td>
<td>?</td>
<td>?</td>
<td>Supplies for the army</td>
</tr>
<tr>
<td>Villa Tunari</td>
<td>Nueva Marka Kindergarten</td>
<td>Nuns</td>
<td>Greenhouse, rabbit hutch</td>
<td>Vegetables, rabbits</td>
<td>Supply for kitchen of kindergarten</td>
<td></td>
</tr>
<tr>
<td>Villa Bolivar A. Esperanza V. Tupac Katari</td>
<td>PROA c NGO</td>
<td>Women</td>
<td>Greenhouse, plastic hoods</td>
<td>Vegetables, angora rabbits</td>
<td>Sale, subsistence</td>
<td></td>
</tr>
</tbody>
</table>
### Private gardens in La Paz en El Alto

<table>
<thead>
<tr>
<th>District</th>
<th>Producer</th>
<th>Technology</th>
<th>Production</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cala Cota</td>
<td>Women</td>
<td>Small domestic</td>
<td>Vegetables, potatoes, beans, maize, herbs, pigs</td>
<td>Subsistence</td>
</tr>
<tr>
<td>Pasankeri</td>
<td>Woman</td>
<td>Small home garden</td>
<td>Vegetables, potatoes, beans, maize, herbs, guinea pigs, rabbits</td>
<td>Subsistence</td>
</tr>
<tr>
<td>Centre (Avenida, Kantutani)</td>
<td>Women</td>
<td>Home garden</td>
<td>Vegetables, potatoes, herbs animals (2 cows, guinea pigs, duck)</td>
<td>Subsistence</td>
</tr>
<tr>
<td>Zona Rio Abajo (Mallasa)</td>
<td>Women, families</td>
<td>Greenhouse, open field</td>
<td>Vegetables, potatoes, beans, maize, pigs</td>
<td>Subsistence, sale</td>
</tr>
<tr>
<td>Callapa</td>
<td>Women, families</td>
<td>Small home garden</td>
<td>Vegetable, potatoes, beans, maize, herbs, pigs</td>
<td>Subsistence</td>
</tr>
<tr>
<td>Rio Seco/Zona 23 de Marzo</td>
<td>Nuns of Adoratrices de la Sangre de Cristo*</td>
<td>Greenhouse, open field, chicken coop</td>
<td>Potatoes, onions, herbs, chicken</td>
<td>Subsistence</td>
</tr>
</tbody>
</table>

* = Jahn 1999  
Source: Kreinecker 1999