**Sustainable production of Andean camelids in the highlands, Bolivia**

**GENERAL INFORMATION**

**Sources of information of the practice**
Interviews with members of the community in May 2006, documentation produced by the Latin American Center for Rural Development (RIMISP)

**Relevant contacts**
Gloria Mendoza Miranda (Engineer), Department for Rural Development (DDR) of the Evangelical Methodist Church in Bolivia (IEMB), tel: +591-2 2312793 gloris.m@hotmail.com; Samuel Condori Quispe, tel: +591 735-07761

**LOCATION OF THE PRACTICE**

<table>
<thead>
<tr>
<th>Region</th>
<th>South America</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td>Bolivia</td>
</tr>
</tbody>
</table>

**Province, Districts, Villages**
Department of La Paz, Aroma Province, first Municipal section of Sica Sica, Community of Conchamarca

**Climatic zone**
Dry semi-arid

**Other descriptive information**
- Uneven topography with planes and mountains
- Rainy season: between November and March
- Temperatures can reach 15°C during the day and go down to zero during the night in winter
- Average annual rainfall: 3000 mm
- Land general divided into mini exploitations

**INFORMATION ABOUT THE PRACTICE**

**Practice category**
Managing natural resources sustainably

**Practice type**
Technology for natural resource management

**Sector**
Livestock production system management

**Type of product or service**
Potatoe, quinoa, barley, alfalfa (medicago sativa); llama wool and meat

**Institutions fostering the practice**
Religious institution: IEMB with resources from Heifer International

**Users and beneficiaries of the practice**
Twenty-four families from the Conchamarca Community of Aymaran origin

**Natural resource used or accessed (if applicable)**
Native vegetation that is appropriate animal feed for camelids, water, pastures

**BRIEF DESCRIPTION OF THE PRACTICE**

**Background/problem statement**
The majority of the Conchamarca community has always been farmers and livestock breeders. They often chose to raise sheep so that incomes can be raised through selling the produce on local markets. However, sheep cause much more damage to the soil than llamas because they pull up the vegetation from the roots. Llamas on the other hand cause superficial damage to the vegetation. Overtime pastoral areas where sheep have been raised have suffered degradation and deforestation of native vegetation has also been observed. This process has been exacerbated by the fact that the population cut the bushes to use as an energy source. Furthermore, the system of mini-exploitations means that the farmers have land in various different dispersed areas. Since they do not have well defined pastoral areas, they cannot rotate crops to allow the soil to recuperate.

In many cases, the consequence of these adverse phenomenons is migration of the local population from the country to the city. The concomitant effect is the loss of traditional and ancestral knowledge about the conservation of natural resources.

**Approach followed**
This practice consists of substituting sheep livestock with camelids, that are re-released into their natural habitat or that show strong capacity to adapt. The people of the commune receive capacity building on (grazing rotation). In this way, degradation of pastoral areas is avoided. Furthermore, llama manure is used as organic fertilizer in the cultivated areas, allowing the soil to recuperate as well as the production of organic crops. This manure is also used as combustible material to avoid the cutting of valuable tree sand shrubs such as (baccharis sp.), (polylepisrugulossa), (buddleja sp.) and other native varieties. Also cattle pens have been rebuilt to facilitate manure collection and protect the animals from harsh weather conditions as well as from illness.

The people of the commune receive regular capacity building on different questions of
animal management such as animal health, fodder management, natural nutrition and feed, animal reproduction and crossing, habitat construction, use of fertilizer, agro-ecology as well as other issues. Technical assistance is provided on cattle dipping, parasite disinfestations, monitoring and evaluation of grazing areas. The members are responsible for organizing themselves, responsibilities are distributed evenly.

<table>
<thead>
<tr>
<th>Impacts on natural resource base</th>
<th>Actual: regeneration of native vegetation in some grazing areas, regeneration of some areas of cultivation thanks to use of organic fertilizer.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impacts on livelihood of the practice users</td>
<td>Actual: Cost reduction due to the substitution of chemical fertilizer with organic fertilizer, increased income due to increased land availability</td>
</tr>
</tbody>
</table>
| General success factors                                                                       | - User empowerment  
- Sensitization on the need to conserve natural resources and engender a respectful relationship between human beings and nature  
- Low investment costs  
- Rapid tangible benefits  
- Appropriate and applicable technology  
- Relatively easy management of camelids  
- Incorporation of the traditional knowledge with the current  
- Active participation on the part of beneficiaries  
- Technical support provided by the executing agency through qualified personnel who are familiar with the area and the idiosyncrasies of the people |
| Technology success factors                                                                     | Improve efficient utilization of scarce resources, increase the efficiency of input use  
Incorporate Indigenous Knowledge                                                                 |
| Institutional success factors                                                                   | Access to inputs and resources  
Institutional support and outreach                                                                |
| Problems remaining to be resolved                                                               | Living with others who don’t apply the same sustainable practices and the lack of state policies that foster such practices. Lack of markets for llama meat and wool, lack of camelids of improved race, high costs for camelids prevents better results and diffusion of the practice. |
| Keywords                                                                                        | Animal husbandry methods, animal products, soil conservation, indigenous knowledge, animal resources, domestic animals, green manures, highlands, livestock, natural resource management, plant resources, renewable resources, technological transfer. |