

# Gender, Local Soil Knowledge, and Access to Resources in the Andean region, Bolivia



Keri Agriesti, Dr. Maria Elisa Christie, and Rubén Botello



# The goal of this paper is to discuss research on gendered soil knowledge and practices in the Andean region of Bolivia.

- Introduction to project
- Gender framework
- Literature
- Research questions
- Study area
- Methods
- Results
- Conclusions



# **Introduction to Project**

# SANREM's goal is to increase smallholder food security through conservation agriculture production systems (CAPS).

## *CAPS:*

- *Minimize soil disturbance from tillage*
- *Maintain a year-round soil cover*
- *Utilize crop rotation*



Activities are carried out by seven U.S. universities and 34 host-country organizations in 13 countries.

**Using gender analysis, the Gender CCRA identifies gender-related factors that may contribute to the success or failure of CAPS.**



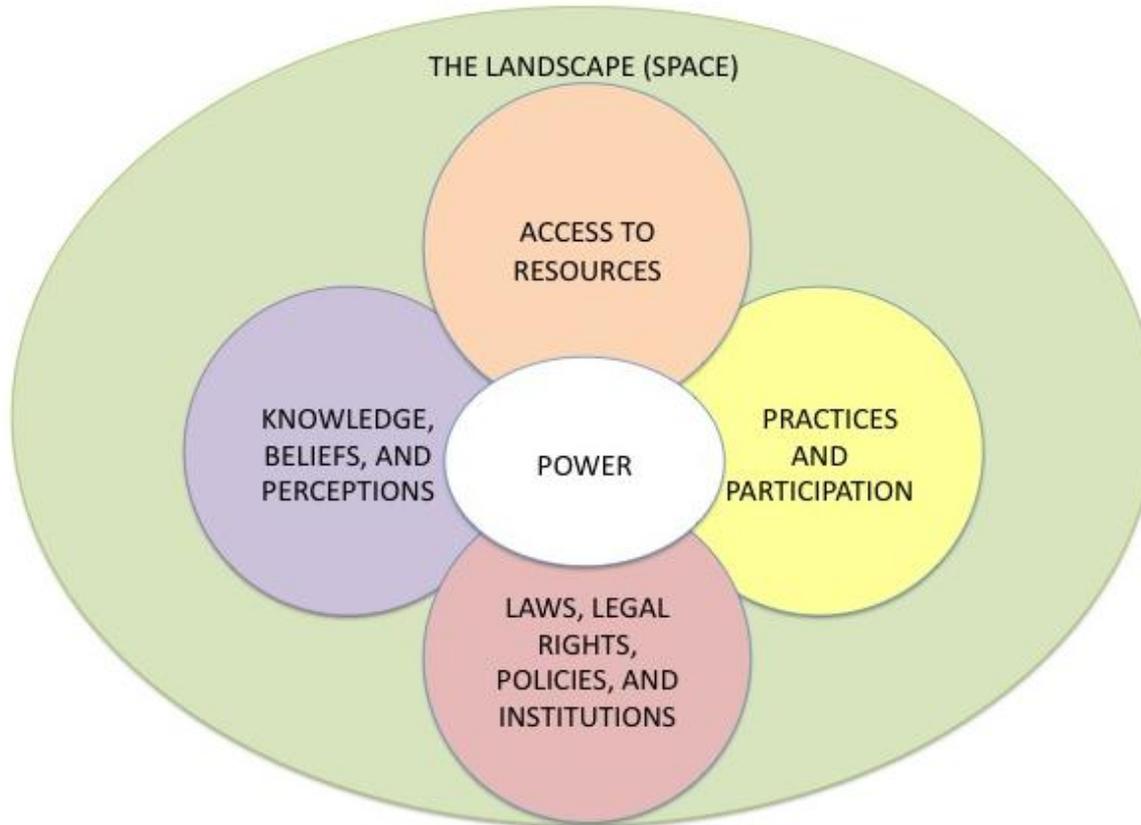
It asks: “Why is gender important?” and “How CAPS will affect men and women differently?”

## We define gender as . . .

- . . . the “social roles and identities associated with what it means to be a man or a woman. Gender roles are shaped by ideological, religious, ethnic, economic and cultural factors and are a key determinant of the distribution of responsibilities and resources between men and women” (FAO 2011). Gender also includes the power relations and division of labor between men and women that influence land management practices and access to resources, including land, technology, and information.

# We use a gender analysis framework to better understand gender dimensions of everyday agricultural life related to CAPS.

Power, Space, and the Four Dimensions



Gender Dimensions Framework by Drs. Deborah Rubin and Deborah Caro, Cultural Practice.

## **This research is informed by literature that connects social and environmental issues from a gender perspective.**

- **Political Ecology:** An important approach to studying the causes and outcomes of environmental degradation in relation to social marginalization (Paulson and Gezon 2005). It resists ideas of technical solutions to solve socio-environmental issues.
- **Feminist Political Ecology:** Uses gender as a central focus to study how gendered knowledge and spaces are influenced by access to and control over resources across culture, history, space, and scale (Rocheleau 2008).
- **Ethnopedology:** The study of local knowledge, beliefs, perceptions, uses, classification, and management of soils by local people and communities (WinklerPrins and Sandor 2006).

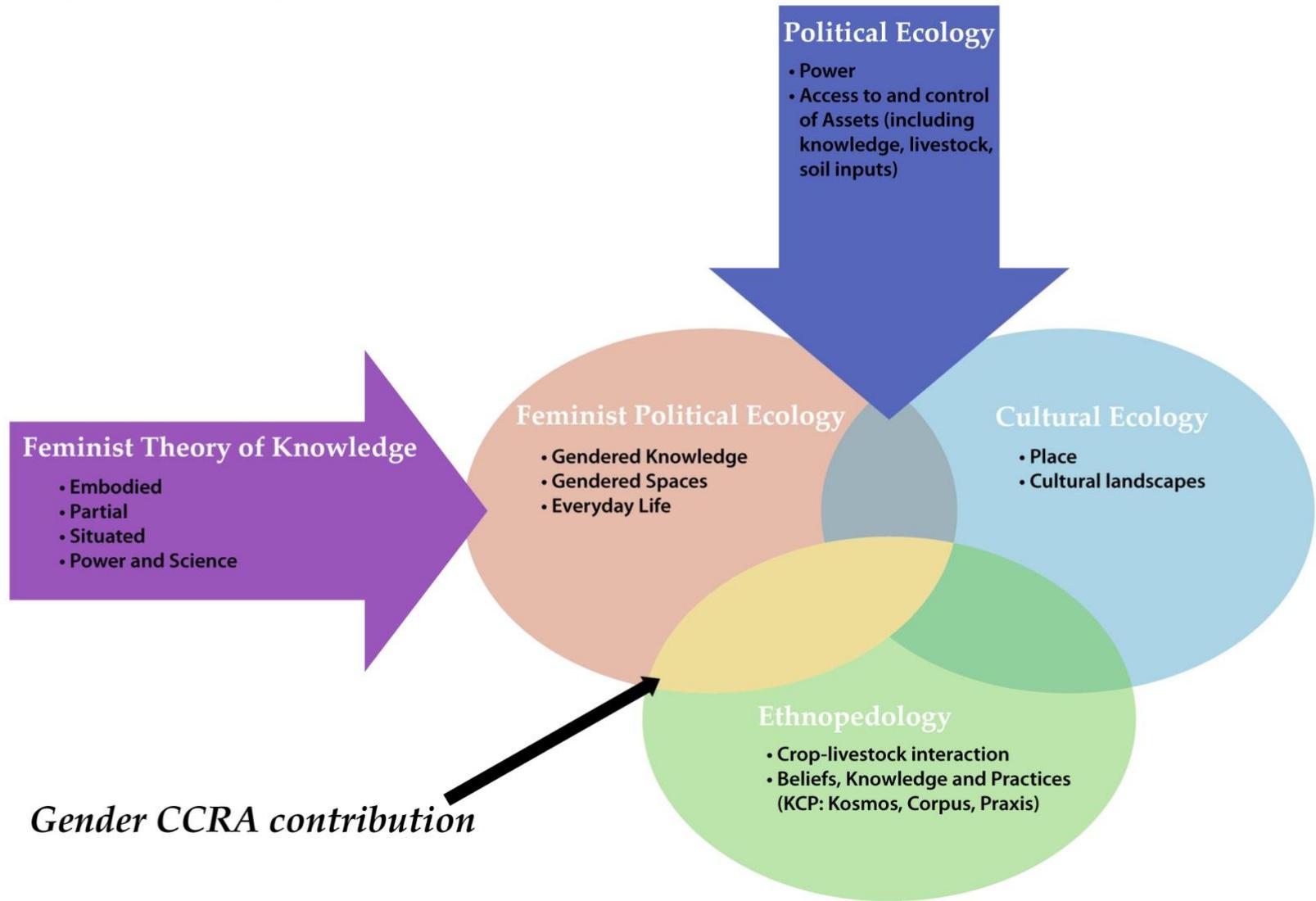
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# Transdisciplinary Research Strategy: Integrating Biophysical and Socio-Economic Sciences



**We applied these concepts and ideas for a pilot project to document local soil knowledge and gendered practices in relation to the landscape in the Bolivian Andes.**



# Research Questions

**My research questions explore gendered sense of place—the ways people know of and create meaning with land and animals in context with broader biophysical and political economic processes.**

- *“What is the character and extent of differences in men and women’s soil knowledge, beliefs, and perceptions; management practices; and access to land, animals, and technical information?”*
- *“How do men’s and women’s gendered knowledge and practices and changes in the landscape and political economic processes influence each other?”*
- *“Are gendered differences in these areas relevant to conservation agriculture implementation and outcomes?”*

# Study Area

Research was conducted in a Quechua-speaking community in the Tiraque district in the Andean region of Bolivia.



Sank'ayani Alto, Tiraque,  
Cochabamba District, Bolivia



We work in collaboration with PI Dr. Jeff Alwang of the *LTRA 7: Pathway to CAPS in the Andes*, Latin America team, SANREM CRSP and host institution PROINPA, Bolivia.

# Site Description



Tilling with oxen



Pasturing sheep



70-80 Households

Population ~300

Smallholder Farmers

Average plot size < 1 Acre

Elevation 14,000-15,500 feet

A dynamic history of land reform, soil erosion, and development.

# **Participatory Mixed- Methods**

# To begin research, I conducted a Focus Group Discussion about community soils in gender separate groups.



Women's focus group mapping soils on a community satellite image.



Men's focus group describing community soil samples.



IKONOS satellite image provided by host country.

Next, I visited ten different households with male/female couples or widowed women to discuss and map agricultural resources, livestock, and farm soils.



Participatory map of a woman farmer's land and soils.



Photo used for photo interpretation exercise.

“What’s going on in this photo?”

Following the field visit, I used a GPS to map the 'best' and 'worst' soils as identified by farmers. In addition, the host institution PROINPA collected soil samples of these places.

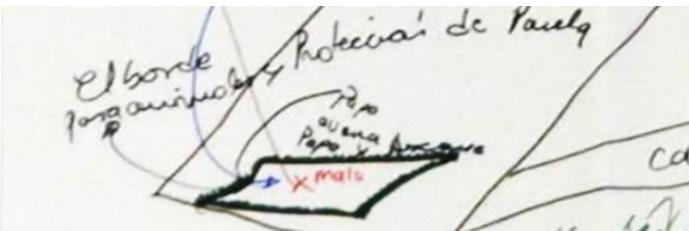
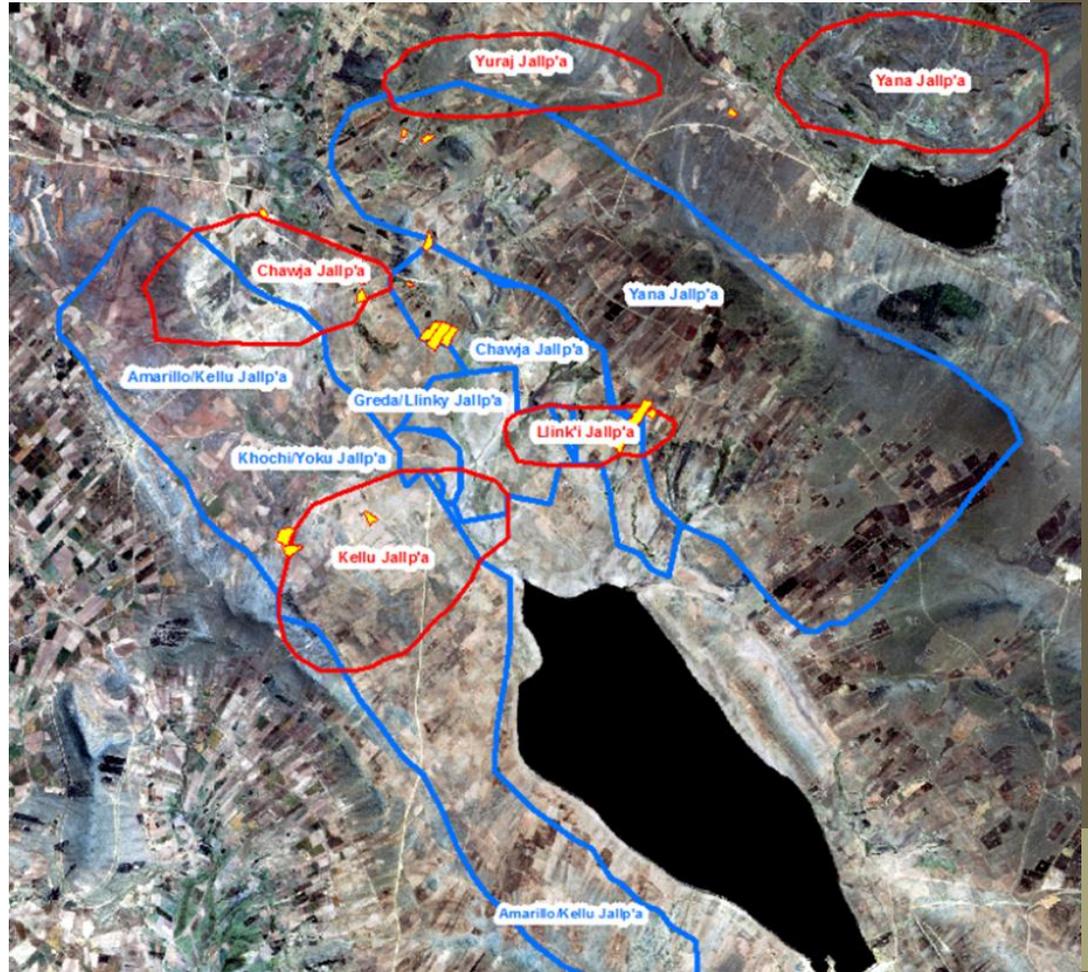
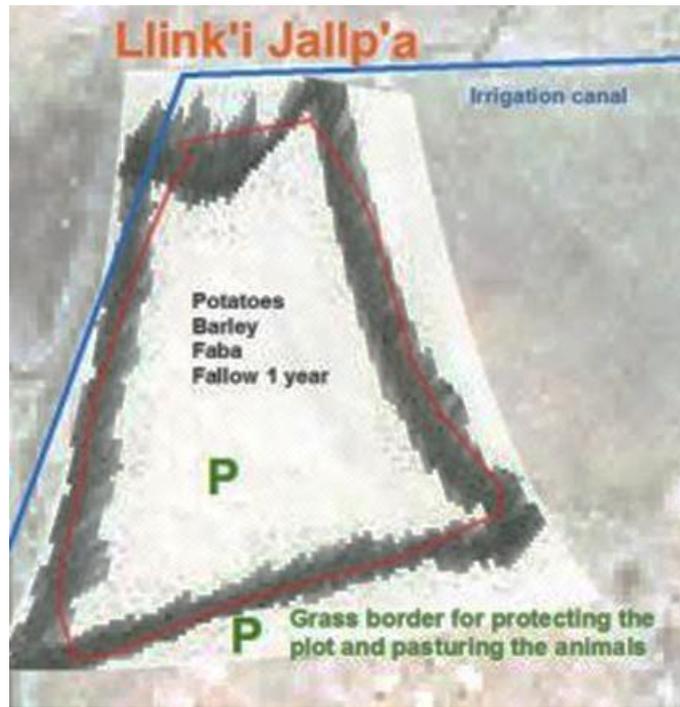


**Other methods included a family host-stay, a closing focus group discussion at the end of fieldwork, and participant observation.**



Participant observation included planting potatoes and pasturing sheep.

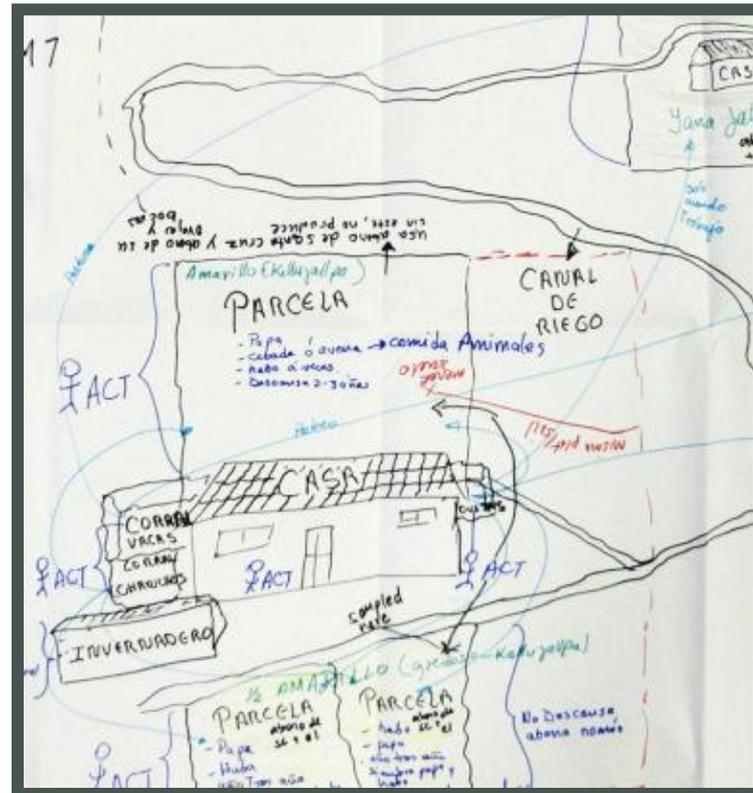
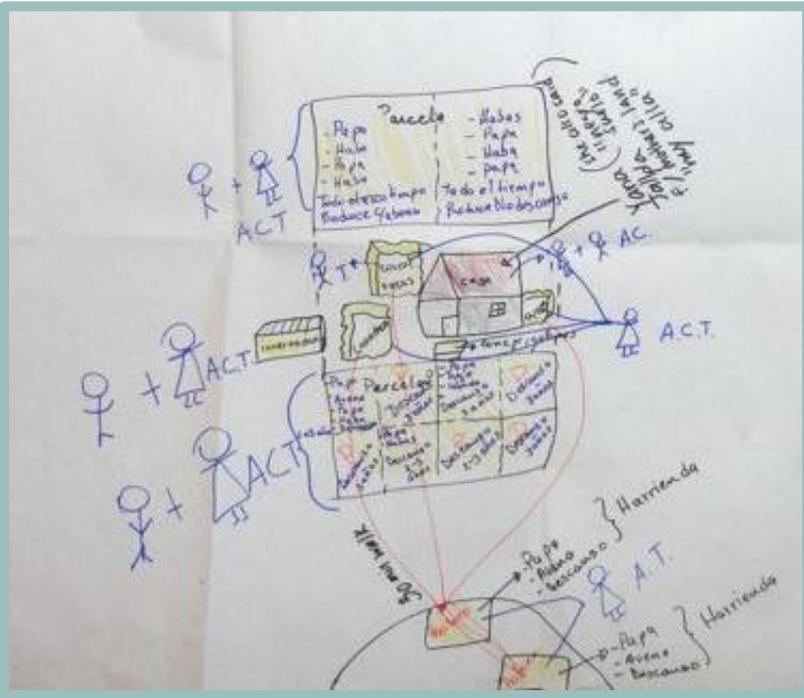
When I returned from the field, I also used geospatial techniques to map gendered soil knowledge and space.



# **General Results**

# Participatory mapping was important for men and women's equal participation and also for documenting gendered soil knowledge, space, and shared labor practices.

A woman (left) and man's (below) participatory resource and soil map from a household visit.



*“Local or indigenous cultures and people hold significant knowledge of soils and environments, attained by experience and testing through many generations of living close to the land” (WinklerPrins and Sandor 2003).*



Man's map  
(left)

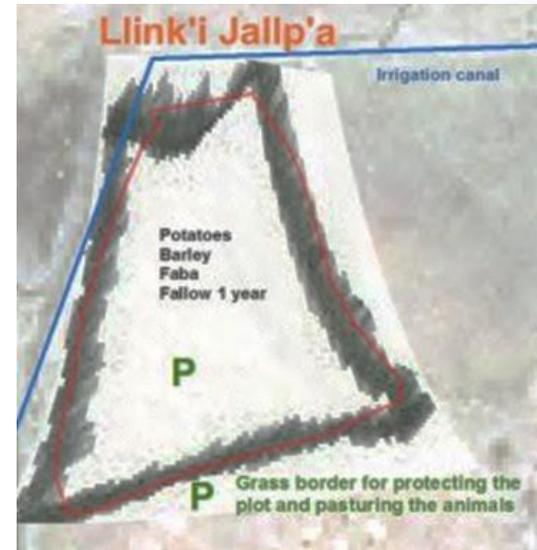
Woman's  
map (right).



We also found that using geospatial techniques to ‘map’ gendered soil knowledge and space helped show patterns in men and women’s resource and livestock use.



A woman (left) and man’s (below) map of a plot.

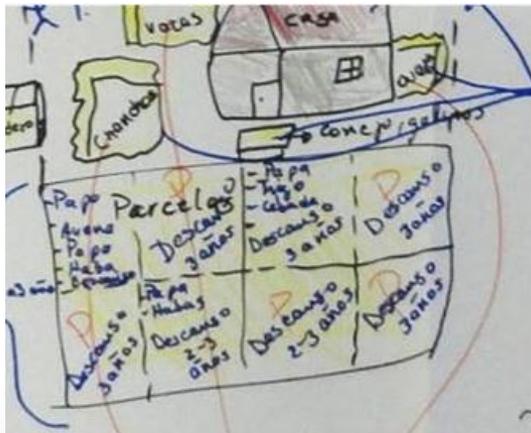


“... hace volver dura la tierra "ch'ojro" despues de regar con agua en epoca de lluvia; es rebaloso la tierra” (Interview with woman farmer, July 2011).

“Aqui esta negro siempre, pero al fondo adentro que tiene piedras y amarillo siempre esta adentro, no. No todo negro esta. Como estamos produciendo el terrano al dentro que esta saliendo, no... medio amarilla mescla esta... si, casi mas or menos. Para sembrar esto y pastoreo ahi” (Interview with man farmer, July 2011).



**Women's soil knowledge and space is constructed partly by tying sheep in plots or shepherding them across mountains, as well as production.**



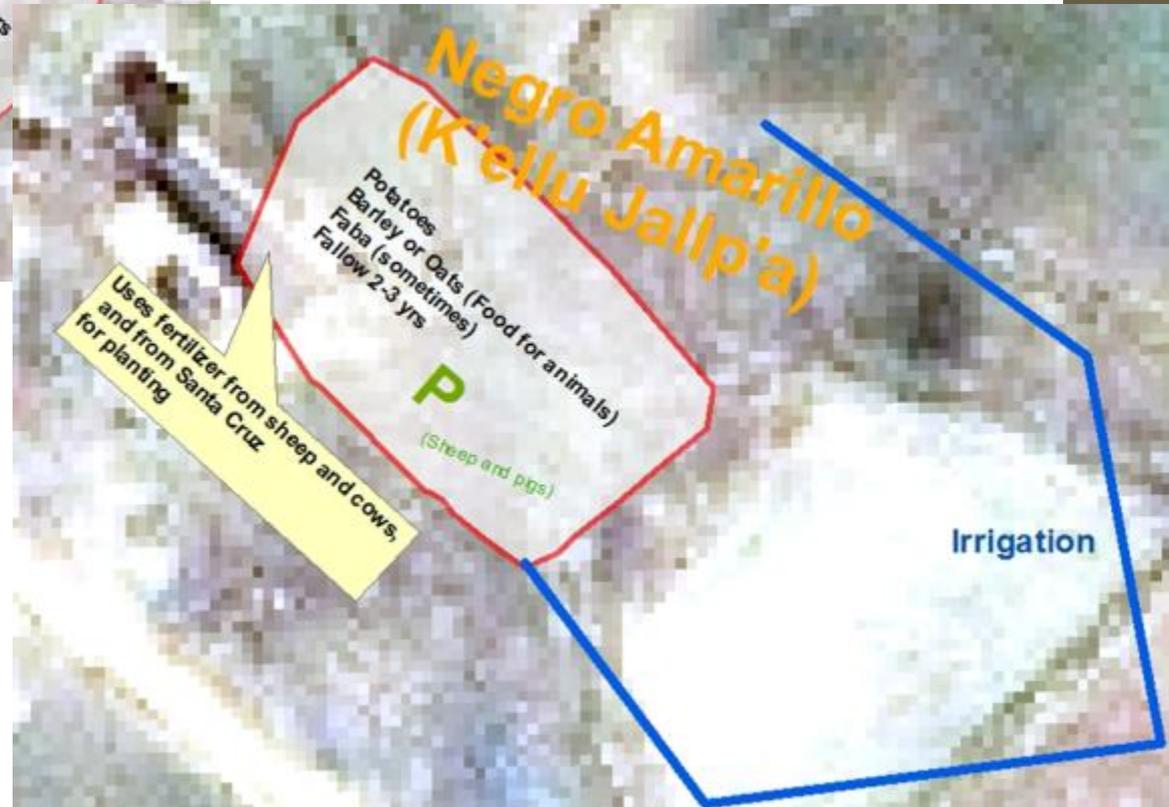
*"In the fallow plots, I tie my animals when I have time because I have to make chuño, cut barley, and when I have time I go to the hills to graze the animals. I do not leave any animals behind because it is dangerous on the hill. There are foxes that eat the sheep. Also they come to the house to eat chickens. In August it is very dangerous"(Interview with woman farmer, June 2011).*

A woman's map of her plot.

Woman

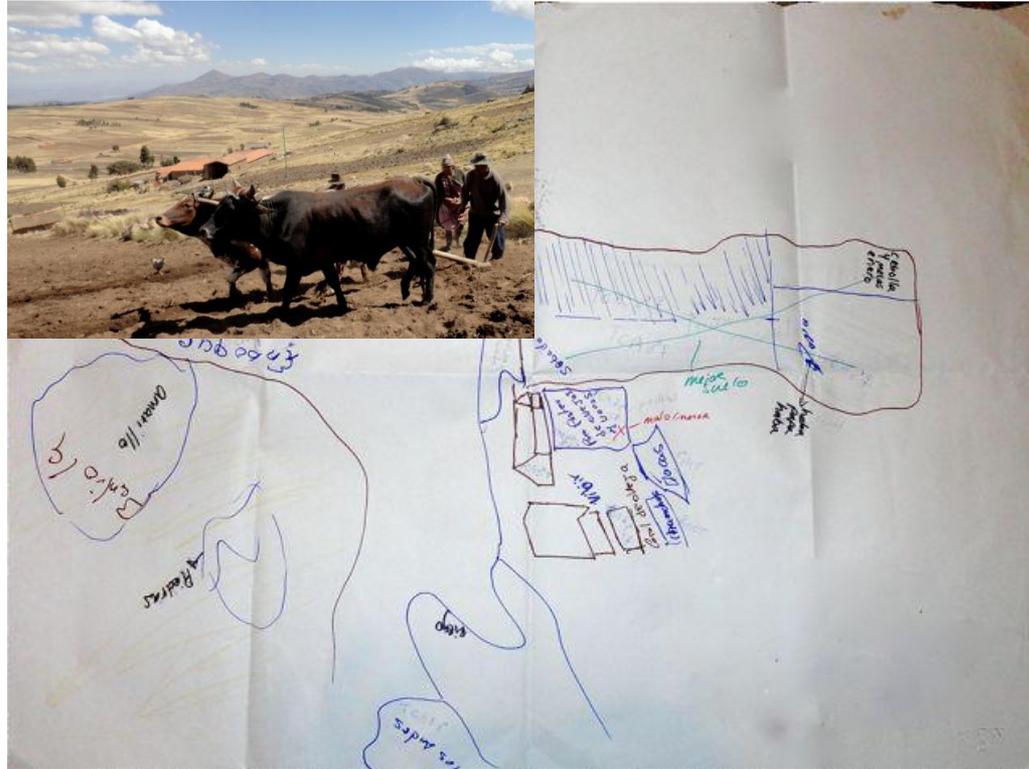


Man



*"In this plot, we divide it. On one side we put potato and the other bean. After the bean we plant barley for the animals throughout the field" (Interview with man farmer, July 2011).*

For men, their soil knowledge and space is related to working the land through activities such as tilling, building houses, and irrigation.



"My plot of 2 ha. Sometimes we divide 3 parts 4 parts. I put barley, beans, potatoes. Sometimes we put onion where barley is placed. After we sow potatoes, then barley, then sow potatoes 1 time per year, which is always for animals (stubble). Where I put bean, then I sow potatoes, then beans, then potatoes, just once a year. Where I put potatoes, next I put barley, potatoes, barley, sometimes I put onion in half. Where I put barley, the animals are always tied there to eat" (Interview with man farmer, July 2011).



**Man's map of a plot**



**Woman's map of a plot**

*"In my plots that I bought with my husband we plant potatoes, beans and barley. Potatoes we sell some, we save some to eat. The beans are used for cooking and fodder. We save some of the seeds for replanting" (Interview with woman farmer, June 2011) (Map drawn above) .*

# Men's Soil Types



# Women's Soil Types



# General Results

- *“Indigenous people do not simply respond to their environment but rather to the environment as they conceive it” (Sandor and Furbee 1996).*
- Men focus on irrigation, crop rotations, and soil cover (what goes in).
- Women focus on production of food and forage (what comes out).
- Men and women distinguish soil types or names by color, texture, water content, workability, rock content, or crop-livestock use.
- Men and women have shared labor practices on soil types only deemed as “good.”

# Conclusions

*“These are new landscapes, symbolic of many changes that have occurred in how people live, and think of living, in these rural spaces, and of the extent to which so many of their practices are mediated through the incorporation of modern ideas, things, and commodities” (Bebbington 2000).*

# Gendered soil knowledge and space is unique and situated. It has mutually informed the different ways men and women make or define their livelihoods with the landscape, both practically and symbolically (Paulson 2003, Canessa 2005).

- *“More generally, as the economic geography of these places has changed, so new and changing cultural practices have also been played out, creating **landscapes** that continue to be distinctive, and indeed alternative to modern capitalist landscapes even as they incorporate many ideas, practices, and technologies of modernity” (Bebbington 2000).*
- *Autonomy and resistance (Lagos 1994).*



**How do we represent and discuss gendered, local soil knowledge, practices, asymmetrical exchanges (Paulson 2003) in broader contexts without commodification (Canessa 2005) or blame on the “Indian?”**

**How do we relate these contexts to gender and development?**

**Are gendered differences in these areas relevant to conservation agriculture implementation and outcomes?**

# Questions ?



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**Contact: [agriesti@vt.edu](mailto:agriesti@vt.edu)**

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