

**CULTURAL FACTORS AFFECTING FOOD PREFERENCE: THE CASE OF
TARWI IN THREE QUECHUA SPEAKING AREAS OF PERU**

By

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“Don't walk behind me, I may not lead. Don't walk in front of me, I may not follow. Just walk beside me and be my friend.” Unknown

To my friends: Pepe, Leny, Clau, Pepe, Nando and Dave.

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CHAPTER I

INTRODUCTION

In 2004, a press release by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) presented in Quito, Ecuador, reported:

(23 November 2004) To be poor and indigenous and live in marginal sectors on city edges or in rural zones in the Sierra and the *Altiplano* is an almost certain recipe for hunger in Bolivia, Ecuador and Peru. In the Andean sub region, one of every five children suffers from chronic malnutrition (low height for age between 0-5 years).¹

The report stated that in Andean countries half the children whose first language is indigenous suffer from malnutrition. The article states that Peru, especially in its rural areas, is one of the four countries affected by high malnourishment rates. In 2000, 2.3 percent of the total deaths were associated with malnourishment. In fact, malnourishment was the twelfth leading cause of deaths in Peru. Peru is, ecologically and culturally, a diverse country. This ecological diversity gives Peru an immense agricultural potential, while its cultural diversity hinders Peru's development due to societal divisions. These divisions are exacerbated by geographical, historical, political and cultural factors. Malnourishment in Peru results not only from economic and political injustices and disparities, but is also related to cultural factors embedded deep in the people's consciousness of what is "good to eat" and which foods are better for Peruvians.² As with several other cultures, food preference has a strong sense of identity attached to it. One nutritionally stigmatized legume that has been overlooked by most Peruvians is tarwi (*Lupinus mutabilis*). In its nutritional qualities, tarwi is comparable to soybeans. Social factors such as race, ethnicity and economic status strongly impact how people view

Andean crops. Like several native crops in the Andes, tarwi is stigmatized as a second rate crop fit only for poor indigenous farmers. In this project, the cultural factors that affect food preferences will be studied, specifically the reasons behind tarwi's unpopularity and its perception as a low-prestige food. Also, the need for a basic brochure outlining its benefits will be discussed.

CHAPTER II

BIBLIOGRAPHICAL ANALYSIS

This chapter will first focus on the concept of food preference in order to highlight its significance for the study of tarwi in the Peruvian Andes. It will be followed by an overview of three departments: Ayacucho, Cusco and Andahuaylas. The populations of interest were the communities and cities where the interviews took place: Huamanga, Socos, Chunllaq and Waychao in Ayacucho; Cusco, Pomacanchis and Sangarara in Cusco; and Andahuaylas in Apurimac. In addition, this chapter looks at the eating system and meal schedule, the kitchen, and the “vertical” pattern of agriculture in the economy of the Andes. Finally, it describes tarwi’s nutritional value, its agricultural characteristics, and the challenges ahead for this underutilized crop.

Food Preference

“We are what we eat” is a common saying among people who study nutrition. This section examines food preferences and, how such preferences are exercised. The act of consuming food represents a basic locus of identity, of conformity, and of resistance. “Even those who appear otherwise powerless exercise choices in food preparation and consumption...”³ Sensory perception plays an important role in food preference; nonetheless innate preferences cannot be ignored. Steiner studied the reaction of newborns to sweet solutions and photographed their reactions. The pictures of newborns tasting sweet solutions show facial relaxation, smiles and licking and sucking of the tongue suggesting an innate preference for sweet solutions.⁴ Conner and Armitage argue

that beyond these factors “research on the social level will provide the best explanation of food choice.”⁵ For example, breakfasts on weekdays are going to be influenced by work schedule; thus they will be predicted by habit more than breakfasts on weekends. Also, cultural factors such as societal beliefs, food availability, language, gender differences and place of residence can determine a food preference. In Peru, for example, tarwi is rarely introduced as a “desirable” food to the young, so despite its nutritional qualities; its consumption is minimal.

Smith and Appadurai categorized various foods as either “unifying agents” – foods that are produced locally in large quantities to ensure access – or as “separating agents” – foods that sustain hierarchical relationships.⁶ For instance, in Ayacucho, potatoes act as a unifying agent because they are consumed by people of all social classes, genders and ages. On the other hand, meat is a separating agent. Only people who have money can afford to buy and eat meat.

Examples

Food use is hampered or encouraged for cultural reasons. People eat or avoid certain foods because they are viewed in a different way culturally. Similarly, tarwi’s differential consumption reflects the cultural matrix within which it is eaten in different parts of Peru. Thus, why people choose to eat or not to eat certain foods is related to social constructs based on religious beliefs, status, ethnicity and gender.

Consider, for example the article published in *The Guardian* about a trial in Paris. It pitted a charity organization *Solidarité des Français* or Solidarity of the French against the Parisian police. The charity group was serving pig soup to the *Sans Domicile Fixe* or the homeless group, which has many Jewish and Muslim people. The charity group

considered pork stew a true *Gallic* meal. The police had banned serving pork stew because of alleged affronts to Jews and Muslims-- and possible protests. A declaration in the charity group webpage states: "The only condition to eat with us is to eat pork...Attention, cheese, dessert, coffee, clothes, snacks go with the pork stew: no pork stew, no dessert -- the only rule of our action: our own before the others."⁷ This example shows the powerful role that food plays in culture. An oppressed minority in France rebels by choosing what to eat or not, as this makes them real Jews or real Muslims. On the other hand, the *Gallic* group ostracizes *the others* by serving pig soup, thus strengthening their identity through food. As true French men and women, they were serving “real” French food (pig soup), which potential French citizens should eat.

In “Lunch in an East Germany Enterprise – Differences in Eating Habits as Symbols of Collective Identities,” Thelen says that East Germans saw reunification as a way to become “one people.” They imagined reunification meant access to consumer goods such as tropical fruits imported from free-market countries.⁸ In this example, the boundaries imposed on socialist East Germans were going to be redrawn the moment they could eat tropical fruits.

Dr. P. Pushpamma affirms in his study of sorghum in Andhra Pradesh, India that “the inferior social status of sorghum [is] due to the notion that sorghum is unsuitable for use in high status foods.”⁹ So, people from higher and middle castes in India avoided eating sorghum in order to not be perceived as belonging to a lower social status.

Among the Aymara in Bolivia, beer is a popular item at weddings and other fiestas.¹⁰ For family fiestas, guests might bring between four to eight cases of beer. For larger communal celebrations, the beer donation is usually much larger. Among Aymara

people, any political candidate who wants support must be considered a good generous person who cares for the people of the community.¹¹ What better way to show this than with lots of beer.

In *Folklore, Food and National Identity*, Clare A. Sammells shows how eating llama meat in La Paz, Bolivia functions as an ethnic marker between middle class and the city's indigenous neighborhoods. As an ethnic marker, llama meat in La Paz creates a clear social division. As Sammells describes:

An amorphous line, depending on combined factors of race, class, and ethnicity, divides llama eaters from llama avoiders, and shifts depending on the perspective of the person drawing it. Both sides agree that llama meat is sold openly in poor indigenous markets such as the one where I worked and that it is never sold in upper-class supermarkets. Ambiguous markers such as food offer a way to pry open these complex relationships without losing their multifaceted richness.

Thus eating llama meat carries a stigma, as it is associated with such indigenous stereotypes such as dirty, lazy, and disease-ridden. Scorning Indian foods goes back to colonial times, when the boundaries between Indigenous Americans, Spaniards, and *Criollos* were frequently delimited by what one ate and drank.¹²

Weismantel in *Food, Gender and Poverty in the Ecuadorian Andes* mentions an interesting gender dynamic in the kitchen among the rural inhabitants of Zumbagua. Women would only eat a *jayaj* food like hot peppers if it had undergone a “feminine” culinary process. That is because *jayaj* foods such as hot peppers, salt, and alcohol are associated with rawness, strength and masculinity. In this case, the *jayaj* foods create a boundary between masculine and feminine worlds.

Wheat is another example of utilizing a food, a grain in this case, to achieve a higher social status. Wheat was brought to Peru by the Spaniards and it represents the white “race”.¹³ Today, serving pasta confers prestige. In urban Peru, hosts like to impress their guests by

serving lasagna as the main entrée. In rural Peru, serving *t'anta* (wheat bread) or adding *fideos* (wheat pasta) to the soup makes it “whiter,” and thus more prestigious. In the markets, the vendors who sell “whiter” products have nicer and better stalls than the vendors who sell Andean crops.

However, there are cases where a low prestige food has become the “signature” national dish. For example in Brazil, *feijoada* was a dish originally prepared by slaves from the parts of the pig the master discarded. *Feijoada* recipes include a pig’s snout, ears, and head. Mexico is another example. It has embraced the *tortilla*, a dish the upper classes once scorned. *Tortillas* today are essential to the daily diet in Mexico. They are part of Mexico’s national cuisine, just as *feijoada* is Brazil’s national dish.

As the studies discussed above demonstrate, food preference is linked to cultural norms. In the case of the Andes, indigenous foods, such as llama meat and tarwi are considered to be dirty or dangerous. This used to be true of quinoa, a native Andean grain.

In Peru and Bolivia, quinoa used to be consumed mainly in soups and stews. Today, even NASA (National Aeronautics and Space Administration) recognized its qualities. It considered quinoa for its “Controlled Ecological Life Support Systems” on distance space trips with crew.¹⁴ This got the attention of U.S. food producers and distributors, such as Ancient Harvest, Whole Foods and Wild Oats¹⁵. Quinoa suddenly became “respectable.” It now shows up in several non-indigenous recipes such as cookies, pastries, and breakfast cereals. It was marketed extensively as a health food, so Peruvians readopted quinoa. It has become a popular item in both urban and rural areas. Street vendors offer ‘quinoa power bars’ similar to U.S. granola bars. The moment

quinoa got international recognition it became more attractive to Peru's upper classes, mostly whites and *mestizos*. The prestige quinoa has obtained is not yet shared by other Andean crops such as tarwi. Traditional Andean foods are still considered to be for uneducated "Indians."

Thus, a host of cultural factors affect what we prefer to eat or what we prefer not to eat. Most of the time however, what we select is largely unconscious based more on habit and custom than on a clear sense of preference. Sammells, for example shows that "custom" was a main factor mentioned by urban people in La Paz in their acceptance or rejection of llama meat. The same situation pertains with respect to tarwi. The attitude of urbanites is "I will eat my food and you eat yours." For in Peru, the unique clothing, music, and diet of people differentiate indians from both whites and mestizos.

Peru

Below I analyze the stigmatization of tarwi in the *sierra* of Peru. First, however, a brief description of Peru and the departments (administrative divisions) where I conducted my interviews will follow.

Peru is famous for its rugged topography. It has three major North- South regions: the coastal plain, the Andean mountains, or *sierra*, which are located in the central part of the country, and the eastern lowland jungle of the Amazon Basin or *selva*. The center of political, economical and cultural power, Lima, is located in the central *costa*.¹⁶ The Andes are further divided into three ranges: the eastern mountains or *cordillera oriental*, the central range or *cordillera central* and the western slopes or *cordillera occidental*. The result is a web of sub-regions and micro-climates created by the differences in altitude, humidity, and temperature. Due to this plethora of climates

and ecological regions, Peru's biological diversity is enormous. Its primary agricultural products are: tropical and subtropical crops like coffee, cotton, sugarcane, plantains, oranges, rice and coca; and temperate crops like potatoes, grapes and corn, plus poultry, beef, dairy products, and fish.¹⁷

In Peru, 54 percent of the population lives below the poverty line and more than 12 percent are illiterate.¹⁸ Undernourishment affects 3.3 million people or approximately 12 percent of the population.¹⁹ Peru's main agricultural import is wheat.²⁰ The fact that a staple food like wheat has to be imported highlights the contradiction between agricultural production, food preference, and consumption in Peru.

Peru's extremely poor, a quarter of the total population, live in rural and mountainous areas. The incidence of extreme poverty among rural Peruvians in 2004 was 40.3 percent compared to 11.5 percent for urban Peruvians. For the *sierra*, the incidence of extreme poverty was 36.5 percent, while for the *selva* it was 26.4 percent, and for the *costa* it was 8.1 percent.²¹ According to the World Hunger website such poverty leads to food insecurity because people do not consume even the basic minimum recommended diet. According to the Oxford English dictionary, malnutrition is the "lack of proper nutrition, caused by not having enough to eat, not eating enough of the right things, or being unable to use the food eaten."²² The main cause of food insecurity in Peru is lack of daily food. The average daily caloric intake is 1,950 calories, or 88 percent of the recommended daily amount."²³

Peru is divided into 24 departments and one constitutional province. The departments are divided into provinces, and each province is subdivided into districts. In the cities, the districts are divided into urbanizations, and in the country into

communities. The units of interest in this study come from the departments of Ayacucho, Cusco and Apurimac.

Ayacucho

Ayacucho is located in the central Andes of Peru and is one of the poorest departments of Peru. Its extreme poverty rate was 25 percent in 2004.²⁴ In 2005, Ayacucho had a population of roughly 650,000 inhabitants.²⁵ Illiteracy rates were 41 percent for women and 13 percent for men.²⁶ The interviews for this study took place in Urban Ayacucho (Huamanga) and Rural Ayacucho (Socos, Chunllaq and Waychao). An important fact about Ayacucho is that its population has been greatly affected by terrorism. Shining Path, the Maoist terrorist movement, was started in Huamanga, Ayacucho. In 1980, Abimael Guzmán, a professor from the philosophy department of the State University, began to organize groups in communities around the city. From 1980 to 1992, almost 70,000 people died in the struggle to control the departments. According to the report presented by the Truth Commission, of the total, 46 percent were killed by Shinning Path, 30 percent by government agents and 24 percent by paramilitary and self defense groups.²⁷ In 1992, Abimael Guzman was tried and sentenced to life imprisonment, closing a very bitter chapter in Peru's and Ayacucho's history. Nonetheless, terrorism's long term effect has been many orphans, single mothers, and an exodus of Ayacuchans to Lima. Overall, some 600,000 people were directly affected, due to kidnapping, rape, forced disappearance, torture, unfair detentions, serious crimes, and violations to human rights.²⁸ This terrible series of events altered every aspect of daily life, whether in the country or the city. This included what crops rural people planted, and what they knew about how those crops were prepared, cooked, and eaten.



Figure 1- Poster of two women whose relatives disappeared during the terrorism conflict (rural Ayacucho)

Cusco

The department of Cusco has about 1.2 million inhabitants.²⁹ Its extreme poverty rate in 2004 was 26 percent; illiteracy was 36 percent for women and 12 percent for men.

³⁰ The interviews in Cusco took place in Urban Cusco (Cusco city) and Rural Cusco (Sangarara and Pomacanchis). The department's capital, also called Cusco, is Peru's most popular tourist destination and a cosmopolitan city. In Cusco, restaurants serve international food, although mostly for tourists. The revival of Andean crops, food, and dishes has been successful in urban Cusco. Dubbed the New Andean Food Movement, it aims to revitalize Andean products with recipes that use new methods of preparation. Cusco largely escaped the terrorism that so disrupted life in Ayacucho. Cusco's prosperity can be seen in its tourism, food markets, and restaurants. Rural Cusco has also taken advantage of tourism. For example, communities sell their textiles and crafts to tourists at bus stops close to ruins, along the hiking trails, and even in downtown Cusco.

A related trend is *Turismo Vivencial*, where the tourists and travelers visit remote rural communities and stay with a family. Foreign scholars, especially anthropologists, have been active in this particular region of Peru for decades. Over time, such contact with other “worlds” has influenced what local people produce, what they eat, and how they cook.

Apurimac

The third department that enters this study is the Department of Apurimac, located in the central Andes. In 2005, Apurimac had a population of approximately 437,000.³¹ The rate of extreme poverty was 31 percent; illiteracy rates were 41 percent for women and 15 percent for men.³² Andahuaylas is the second largest city of the department. It is much smaller and more rural than either Huamanga or Cusco.

Andahuaylas was affected by terrorism, but much less than Ayacucho was. Andahuaylas has very little of national and international tourism. Only interviews conducted in Andahuaylas appear in this study. I simply did not have the time to get to the department’s rural communities, not even those near Andahuaylas.

Given the harsh economic conditions rural families face in Peru, their top priority is not the nutritional value of what they eat; it is food security-- having enough to eat so they are satisfied physically and emotionally. To summarize, I conducted interviews in five settings: urban and rural Ayacucho, urban and rural Cusco and urban Andahuaylas. My focus was on tarwi, what families knew about it, and if it was eaten, how they prepared it. The interviews will serve as an instrument to measure tarwi’s consumption and to judge how these five communities view it.

Verticality

Verticality is essential for understanding how agriculture functions in the Andes. When John Murra (1985) coined the expression *vertical archipelago*, he referred to the fact that cultivated land was dispersed over a plethora of microclimates located at different altitudes. This allowed villages to vertically integrate production via exchange, by transporting different crops from one zone to another; hence the term *archipelago*. Thus, ancient Andean people domesticated and exchanged many crops, including tarwi, because of the verticality of the Andes. A similar model, although on a much smaller scale can still be observed today in the Peruvian Andes. Peasants own small pieces of land at different altitudes or in different communities. In one case, for example, a family planted maize on a plot at a lower temperate altitude and potatoes at a cooler, higher elevation. Verticality helps us understand Cusco, Ayacucho and Apurimac from an agricultural perspective. The hot-cold system allows us to understand the various eating patterns observed in the places visited.



Figure 2 - A farmer's house and a small plot (rural Ayacucho)

Hot-Cold System

The way people eat in the rural Andes of Peru is greatly affected by their beliefs and traditions. A prime example is the belief in “cold foods” (*alimentos fríos*) and “hot foods” (*alimentos calientes*). George Foster refers to this concept as the most extensive unique element in the totality of Latin American popular beliefs. He posits that this concept comes from the Humoral Pathology of Hippocrates and Galeno.³³ Most likely, it coincided with and reinforced parallel, popular belief systems that were already established. According to his theory each one of the four “humors” was characterized with qualities related to the four elements: fire, soil, water, and steam. Any imbalance of these four humors is believed to result in illness. Foster’s theory is that this notion was transmitted to Hispanic America, where it was taught until the Eighteenth Century. Selected aspects of this theory, such as the classification of foods as “hot” or “cold,” filtered down to Indian communities. Later, the concepts, prescriptions, and prohibitions of popular medicine were transmitted to subsequent generations. Another concept related to Humoral Pathology that is still alive in the Andes is the notion of “heavy foods” (*alimentos pesados*) and “light foods” (*alimentos ligeros*). Consequently, one can find foods cataloged as “cold and light” and “hot and heavy.” According to MacElroy, “humoral medicine mirrors other systems in Latin America, the Middle East, Malaysia, Indonesia, and the Philippines. Ayurvedic medicine in India, as well as traditional medicine in China, blends humoral elements with elements of other systems.”³⁴

According to Revilla and Solorio, in order to classify a specific food in accordance with the food’s physical aspect, the most important factors are:

- Color. Pale colors are considered cold and dark colors hot. Green is considered “cold.” For herbs, the color of the flowers is determinant.
- Taste. Sweet foods are “hot.” Bitterness means “cold;” spicy foods are “hot;” and bland ones are “cold.”
- Composition. Dry foods are classified as “hot;” watery foods are “cold.”
- Processing. Toasted, sun-dried foods are “hot.” If processing involves an immersion in water, then the food is considered “cold.”
- Place of origin (mainly for animal foods). If the animal lives in water then it is a “cold” food. If it lives on land it is “hot”. If the animal flies it is considered “cold.”
- Zone of provenance. This factor is related to altitude. Foods coming from highland areas are considered “cold”; foods coming from lowland areas are “hot.”

Eating Schedule

The eating schedule is likewise significant, both with respect to food preference and eating behavior. In the Andes, the general pattern is made up of four daily meals. This varies, however, by season. Planting and harvest time, for example influence when the family meets to eat and the composition of the meals. Even so, the dishes offered do not vary much seasonally; there are urban-rural differences. Below is an example from the Bolivian Andes.

Table 1 – TYPICAL DAY’S DIET FOR AN ADULT IN RURAL JAYNA, BOLIVIA

Time	Meal	Ingredients
5:00-6:00am	<i>junt’uma</i> (hot water or breakfast)	Hot infusion (e.g. herbal) or coffee, sugar, k’ispiña “bread”
7:00-8:00 am	<i>almuerzo</i> (lunch)	Soup with <i>quinoa</i> , onion, potatoes, carrot, salt <i>porridge of barley</i>
12:00 m (noon)	<i>Mirinta</i> (snack) or <i>fiambre</i> (cold meat)	<i>p’uti</i> (boiled ch’uñu), <i>m’uti</i> (boiled beans), <i>llajua</i> (spicy sauce) <i>kisu</i> (fresh cheese).
6:00 pm		<i>Mate de Coca</i> (coca tea)
7:00-9:00 pm	<i>Almuerzo</i> (supper)	Soup leftover from morning <i>q’ati</i> (boiled potatoes) torija (fried quinoa and cheese bun).

Source: Mick Johnsson. *Food and Culture among the Bolivian Aymara*. 1986, 49

In the urban Andes, as in industrialized countries, who shows up for each meal reflects both school and work schedules.

Table 2 – TYPICAL DAY’S DIET FOR A LABORER IN LA PAZ

Time	Meal	Ingredients
7:00am	<i>Desayuno</i> (breakfast)	Coffee, sugar, wheat bread
Noon	<i>almuerzo</i> (lunch)	<i>Ají de Ulluku</i> : Lamb stock, lamb meat, <i>Ulluku</i> , <i>ch’uñu</i> , <i>tunta</i> , potatoes, onion, <i>ají</i> , cumin, cooking oil Hot sauce
7:00 pm	<i>Cena</i> (supper)	<i>Sopa de fideo</i> : Beef or lamb stock, leftover meat, potatoes, macaroni, turnips, beans, carrots, onions, <i>ají</i> Hot sauce wheat bread

Source: Mick Johnsson. *Food and Culture among the Bolivian Aymara*. 1986, 50

Johnsson remarks that in Jayna even though the midday snack did not include meat, it is still incongruently called *fiambre* (cold meat). She compares the rural eating routine to the urban routine. The urban routine consisted of three daily meals, namely breakfast, lunch and supper, while the rural routine consisted of five daily eating events. Snacking in between meals however was more frequent among urban children than among rural children. The author noted the similarities between both culinary environments, for example, the large number of ingredients utilized in soups and main dishes and the fact that water was not served with meals.³⁵

The Kitchen

According to Weismantel, the kitchen is the locus of early socialization in Zumbagua, Ecuador. The district of Zumbagua is located in the Province of Cotopaxi in the Ecuadorian Andes. Zumbagua is relevant to rural Ayacucho and Cusco because of the elements they share. It is a rural district where most inhabitants are indigenous and *Kichwa*³⁶ is spoken. Weismantel says that the kitchen is the place where children learn gender roles. It is also a locus for the exchange of ideas. Family and society in Zumbagua are formed in the kitchen. Kitchen life allows for three types of interaction: among women (according to age), between women and men (women, not men, make decisions inside the kitchen), and between inside and outside worlds.³⁷ Johnsson also noted the kitchen's importance in her Bolivian study. When she first lodged with her host family, she was not invited to eat with them in the kitchen; she was mainly served food in her room by one of the children. Later, after becoming a *madrina* (godmother), she was welcomed and received as part of the family. This opening was displayed mainly in the kitchen.³⁸ In a society where more kinship means more wealth, the kitchen is what defines family. Food and not blood is the tie that binds³⁹.

Nutritional Situation

In Peru, statistics show that in rural areas 47 percent of the people have a caloric deficit, while the percent of urban people so affected is 29 percent. Chronic malnutrition affects 24 percent of Peruvian children five years old and younger, while 37 percent of children five years old and younger in the “sierra” experience chronic malnutrition.⁴⁰ Peru has an infant mortality rate of 43 per 1000, compared to 7.0 in the United States and 3.5 in Japan.⁴¹ Infant mortality rate is closely related to malnutrition.

The rural population of the *sierra* is the most likely to have nutritional problems.⁴² Risk factors for malnourishment include income and access to drinkable water in the region. In 1993, most houses in rural areas had no direct access to water. About a million rural households carried in their water from rivers or creeks.⁴³ A more recent study focused on rural Ayacucho. It concluded that deficiencies in basic sanitation continues particularly with respect to potable water.⁴⁴ In 2004, the Health Ministry defined new health strategies to reduce maternal and infant mortality and improve nutrition. One of the initiatives is the National Sanitary Strategy for Healthy Eating and Nutrition.⁴⁵ Implementation is difficult given the lack of Quechua speaking professionals and the bias against Quechua speaking households in the health care system of Peru.



Figure 3 – Example of poster utilized by the Health Ministry in rural Cusco

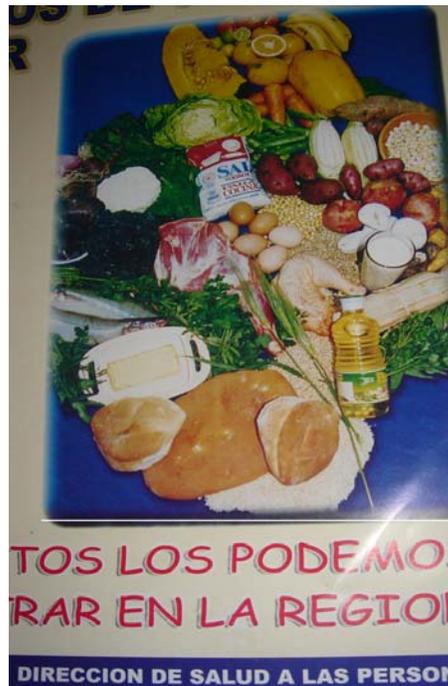


Figure 4 – Close-up of poster utilized by the Health Ministry in rural Cusco

Language: Quechua and Spanish

Language is a key factor for understanding Peru. The 1993 census showed that 80 percent of Peruvians learned Spanish as children, while about 16 percent learned Quechua as their first language.⁴⁶ Quechua, along with Spanish, are Peru's official languages. Nonetheless, there are no Quechua-speaking universities or Quechua-speaking hospitals in Peru. Even worse, health professionals in rural Ayacucho and Cusco are not required to speak any Quechua for certification. Community health workers who do speak Quechua are almost all men, with limited education, who undertook their work voluntarily.⁴⁷ Quechua is the first language for about a third of Peru's rural population. Thus, language, ethnicity and socio-economic status in Peru tend to overlap. Quechua speakers are "Indian," ignorant and poor, thus they eat "Indian" food.

The Case of Tarwi (*Lupinus mutabilis*)

Tarwi is a nutritious traditional legume, domesticated thousands of years ago in the Andean highlands of South America. Today, consumption has dropped, even in the area where the crop was domesticated. Why? Tarwi has a long vegetative period and it is laborious to process. Yet, the most important reason relates to the crop's image. Tarwi is seen as an indigenous low-prestige food. This stigmatization goes back a long time. Spanish colonists rejected native crops. Instead, they introduced familiar crops popular in Spain such as wheat and barley. For most Peruvians, such crops are not only popular, but their consumption confers prestige. However, some Andean crops despite a long growing period and processing problems have still managed to become staples in the Peruvian diet. Quinoa has been "whitened" by the attention it received from abroad.

Tarwi's negative image is unfortunate given its high protein content of 40 percent.⁴⁸

Tarwi consumption could help reduce malnutrition, one of the leading causes of child mortality in Peru, as well as counter undernourishment, which affects 3.3 million people. Yet this very nutritious legume is not studied, improved or appreciated by consumers as much as other similar crops are. The main goal of this study is to focus on the cultural reasons that hamper tarwi's consumption. It also asks what can be done to inform the population clearly about tarwi's many qualities.

Nomenclature

Tarwi is known throughout the Andes by different names. Its scientific name is Lupinus mutabilis. Tarwi is called chocho in Venezuela, Ecuador and northern Peru. In southern Peru, it is known as lupino, ullus, and cequela.⁴⁹ In Bolivia, it is called tarwi, tarhui, chuchus muti, tauri, and tarin.⁵⁰ Isolated areas⁵¹ of tarwi production can still be found scattered throughout the Andean region.⁵² In Quechua, *chuchus muti* means boiled beans that look like nipples, because the seeds of boiled tarwi are white with the hilum surrounded by a dark aureole, resembling a woman's nipple.

Historical Context

The first historical reference to tarwi comes from Obispo Fray Vicente Valverde in a letter from March 28, 1539. He was asking Charles V to tax (tenths): "*the exploitation of the chochos that are like the altramuces of Spain.*"⁵³

Later, Juan de Betanzos, in his account (1551-1552), mentions that during Inca Yupanqui's administration, special areas were established to store corn, hot peppers, and dried tarwi beans.⁵⁴ Guamán Poma de Ayala in *El Primer Nueva Crónica y Buen Gobierno* explains that they (the Incas) used to purge themselves with a liquid resulting

after boiling tarwi, among other concoctions.⁵⁵ Bernabe Cobo in *Historia del Nuevo Mundo* describes several wild varieties of what the Indians called *tarhui*. Garcilazo de la Vega, in *Comentarios Reales de los Incas*, claims that the Incas had beans similar to the ones found in Spain, but bigger and whiter, called tarhui. ⁵⁶



Figure 5- Main products cultivated by the Wari Culture (Instituto Nacional de Cultura Museum – Huamanga - Urban Ayacucho)

Tarwi is a legume that according to Antunez de Mayolo used to make up 5 percent of the Incan diet.⁵⁷ Tarwi seeds have been found in Nazca graves.⁵⁸ In Tiahuanaco, iconographic representations of tarwi have been found in vessels.⁵⁹ Antunez de Mayolo says that tarwi consumption was associated with feasts. In Lima, in the 1790s, it was a tradition to eat toasted tarwi during holidays and after bull fights.⁶⁰

Today, tarwi's consumption is clearly in decline. By one estimate, the area devoted to tarwi fell by over 75 percent between 1980 and 1995.⁶¹ It is not clear when or why the decline began. Weismantel argues that "Indian" foods have been devalued in the New World since the Conquest.⁶² When indigenous peoples and European people were encountering and colliding with each other, Coe asserts that food consumption was "what ideologically separated the Spanish, who consumed European foods as often as possible, from indigenous people, who ate only native foodstuffs."⁶³

Agricultural Description

Tarwi's growth habits reflect the equatorial zone's situation of roughly equal days and nights. Tarwi can be cultivated at elevations of up to 3850 meters.⁶⁴ It can grow on marginal soils without irrigation. Its strong taproot loosens soil, its surface roots collect nitrogen from the air, and its alkaloids help control potato nematodes.⁶⁵ Tarwi is hardy and adaptable. It tolerates droughts and resists pests, and in its adult stage, it is frost resistant.

On average, tarwi takes over 200 days to reach maturity. It produces roughly 200 beans per plant or 59 grams of edible food.⁶⁶ There are five tarwi varieties in Peru: K'ayra, Cusco, Grupo SCG, Puno, and Huancayo.⁶⁷ It is an annual plant whose broad genetic variability is reflected in the different colors of the seeds.



Figure 6- Tarwi seeds from Germplasm Bank at the National University in Cusco

Nutritional Description

Tarwi has a high alkaloid content that ranges from 3 percent to three-tenths of a percent.⁶⁸ The presence of alkaloids is beneficial, as it protects the plant from pests and animals. It is disadvantageous, because in the case of tarwi it makes the bean somewhat bitter. If not washed properly or cooked long enough, residues of these alkaloids can cause stomachaches. The main alkaloids present in tarwi seeds are lupanine and sparteine.⁶⁹

Table 3 – NUTRITIONAL COMPOSITION OF TARWI AND SOYBEANS (percentage per 100 grams)

	TARWI	SOYBEANS
Protein	44.3	33.4
Fat	16.5	16.4
Carbohydrates	28.2	35.5
Fiber	7.1	5.7
Ashes (minerals)	3.3	5.5
Humidity	7.7	9.2

Source: Mario Tapia. *Cultivos Andinos Subexplotados y su aporte a la alimentación*, 2^a. Edición. 1997, 164

Due to its high protein and fat content, tarwi is frequently compared to soybeans. Soybeans, of course, have gone through a long process of scientific development and modern variety selection, which has not occurred with tarwi. Consequently the unexploited potential of tarwi is much greater.⁷⁰ According to the Peruvian Tables of Food Composition (1996), fresh undried tarwi has 2.3 mg of iron and 54 mg of calcium per 100 g.⁷¹

Table 4 – LIMITING AMINO ACIDS FOR TARWI (milligrams per gram)

Amino Acids	Recommended protein composition ⁷²	Tarwi
Isoleucine	28	40
Leucine	66	70
Lysine	58	57
Methionine/ Cysteine	25	23
Phenylalanine/Tyrosine	63	75
Heroine	34	37
Tryptophan	11	9
Valise	35	38
Histamine	19	--

Source: Mario Tapia. *Cultivos Andinos Subexplotados y su aporte a la alimentación*, 2^a. Edición. 1997, 165

The protein content of tarwi is high; in fact its amino acid proportions demonstrate that its lysine content is higher than that of soybeans, lentils and common beans. On the other hand, its limiting amino acid is Tryptophan.⁷³ Tarwi's protein has an 81 percent⁷⁴ digestibility.⁷⁵ Raw washed tarwi has a comparative PER (protein efficiency ratio)⁷⁶ of 37 percent in relation to casein, which is 100 percent.⁷⁷ If tarwi is mixed with quinoa at a ratio of 1:2, the comparative PER (in relation to casein) for the mix is 95 percent.⁷⁸ The quality of the oil extracted from tarwi is superior to peanut oil although not quite as good as soybean oil. Tarwi has 40 percent linolenic oils and 37 percent linoleic oils, both essential fatty acids.⁷⁹

Uses

The edible parts of tarwi are the seeds. The color of the seeds ranges from black to white, along with browns and multicolors in between. Today, the white seeds are preferred for merely aesthetic reasons. To prepare tarwi the beans are first cleaned of sand and other impurities. Afterwards, they are boiled for forty five minutes. Seeds are then put in a sack in a creek or a river for three to four days to rinse out the bitterness. Once the seeds have lost their bitterness, they can be eaten or dried again and stored. Industrial methods for removing tarwi's bitterness are being developed. Developing technologies are more relevant for an industrial context than for a household context.



Figure 7 - Removal of Bitterness in Tarwi: Traditional Method



Figure 8 - Tarwi after Removal of Bitterness: Traditional Method

Tarwi beans can be eaten cooked in stews and soups or raw in salads and snacks. It is alleged that tarwi, even well processed tarwi, is “bad” for the stomach. Since tarwi stays submerged in water for so long, it is viewed as a very cold food. Thus it is a plausible cause of stomachaches. However, most of the people I interviewed never complained that tarwi consumption caused stomach problems. Of course, if tarwi is not processed correctly, stomach cramps can occur due to alkaloid residues. Thus, it is best to eat tarwi cooked rather than raw. If the tarwi is bought at the market one should rinse it before consumption.

Potentialities

Tarwi has a great potential as a source of vegetal protein in the Andes. The mix of tarwi and other Andean cereals such as quinoa or kiwicha provides a complete set of essential amino acids comparable to animal protein. Meat, one of the traditional sources of protein, is a luxury item for rural people. Thus tarwi has the potential to become once again an important protein source in the Andes.

Besides its nutritional qualities, tarwi has agronomic characteristics in its favor. It is especially good when planted in rotation with Andean crops like potatoes and quinoa. Given its high content of alkaloids like lupanine and sparteine, it is resistant to several nematodes and pests.⁸⁰ In fact, it reduces their presence in the soil, preparing the way for other crops. Tarwi also improves the quality of the soil by fixing nitrogen. Thus it could be used as a green manure in highland communities of the Andes.

Tarwi also has great potential outside the Andes, in the tropical highlands of developing countries around the world. In industrialized countries, it could replace soybeans especially in colder regions.⁸¹

Tarwi offers many possibilities for Peru's agribusinesses. To promote exports, Peru's new president Alan Garcia exempted agribusinesses from taxes⁸² at altitudes between 2500 meters and 4100 meters.⁸³ This represents a big chance for the production and industrialization of tarwi and other indigenous crops. Because of its high fat content, oil can be extracted from it. Its high protein content allows for the extraction and isolation of protein. There are also options in the baking industry. Tarwi flour can be added to cookies, pasta, and bread as a fortifier. Products similar to *tempeh*, tofu and soy sauce could also be developed from tarwi. The International Lupin Association, formed in 1982, published the *Lupin Newsletter* and had several international conferences, some of which contain innovative studies about tarwi.⁸⁴

Challenges

During the 1980's and 1990's, the University of San Antonio Abad in Cusco developed faster methods to remove the bitterness from tarwi. Furthermore, by hybridizing two different lines of "sweet" tarwi, alkaloids level were reduced.⁸⁵ The next step is to get improved "sweeter" seeds to farmers in Peru.⁸⁶

Can the plant's long vegetative period be reduced? Quinoa, which grows at the same altitude and latitude, has a vegetative period of between 134 to 196 days.⁸⁷ Tarwi lines with shorter vegetative periods are being developed in Peru, but the road to new varieties is long and arduous. Moreover, budgetary restraints have hindered its development.

Tarwi's negative image may be the biggest challenge. The result is a vicious cycle. Tarwi's reduced consumption means less is spent on its agricultural development. The lack of development reinforces low consumption.

CHAPTER III

RESEARCH QUESTIONS

1. What explanations did people in rural Quechua speaking communities give for eating or not eating tarwi?
2. Could a simple brochure describing tarwi's qualities promote its use?

CHAPTER IV

METHODOLOGY

Description

I conducted field work in Peru between June and August of 2006. The work focused on two neighboring Quechua- speaking communities in the Department of Cusco: Pomacanchis and Sangarara (rural Cusco). I also did interviews in the Spanish- speaking city of Cusco (urban Cusco). In the department of Ayacucho, the field work was conducted in three rural Quechua- speaking communities: Socos, Chunllaq and Waychao (rural Ayacucho). Besides, I also interviewed people in the Spanish- speaking city of Huamanga, capital of Ayacucho (urban Ayacucho).

The people interviewed were adults over eighteen years of age. The localities chosen were accessible by bus or by bus and a short hike⁸⁸. The departments of Cusco and Ayacucho were selected because of their large quechua-speaking population and for their location at an altitude where tarwi can be cultivated. The urban neighborhoods where I conducted interviews were recommended by locals.

The sampling method utilized for the interviews was randomization. The sample size was 40 people in Ayacucho and 41 people in Cusco. Andahuaylas was not originally planned as part of the study, but the opportunity arose to visit Andahuaylas for eight hours, thus the sample size for Andahuaylas is four. I always asked formally for permission to conduct an interview. I conducted the interviews in Spanish in the urban areas, and a translator and I conducted the interviews in the Quechua speaking areas. In

Cusco the translator was Mr. Wilfredo Huisa Conchoy and in Ayacucho the translator was Prof. Lorenzo Huisa Palomino.

The methodology I utilized was interviewing. I designed a questionnaire of forty-two items. Some were factual in nature. Several called for explanations or opinions and were open-ended and were later classified into categories. Most interviews lasted approximately twenty-five minutes. In a couple of cases they extended to several hours and included meals.

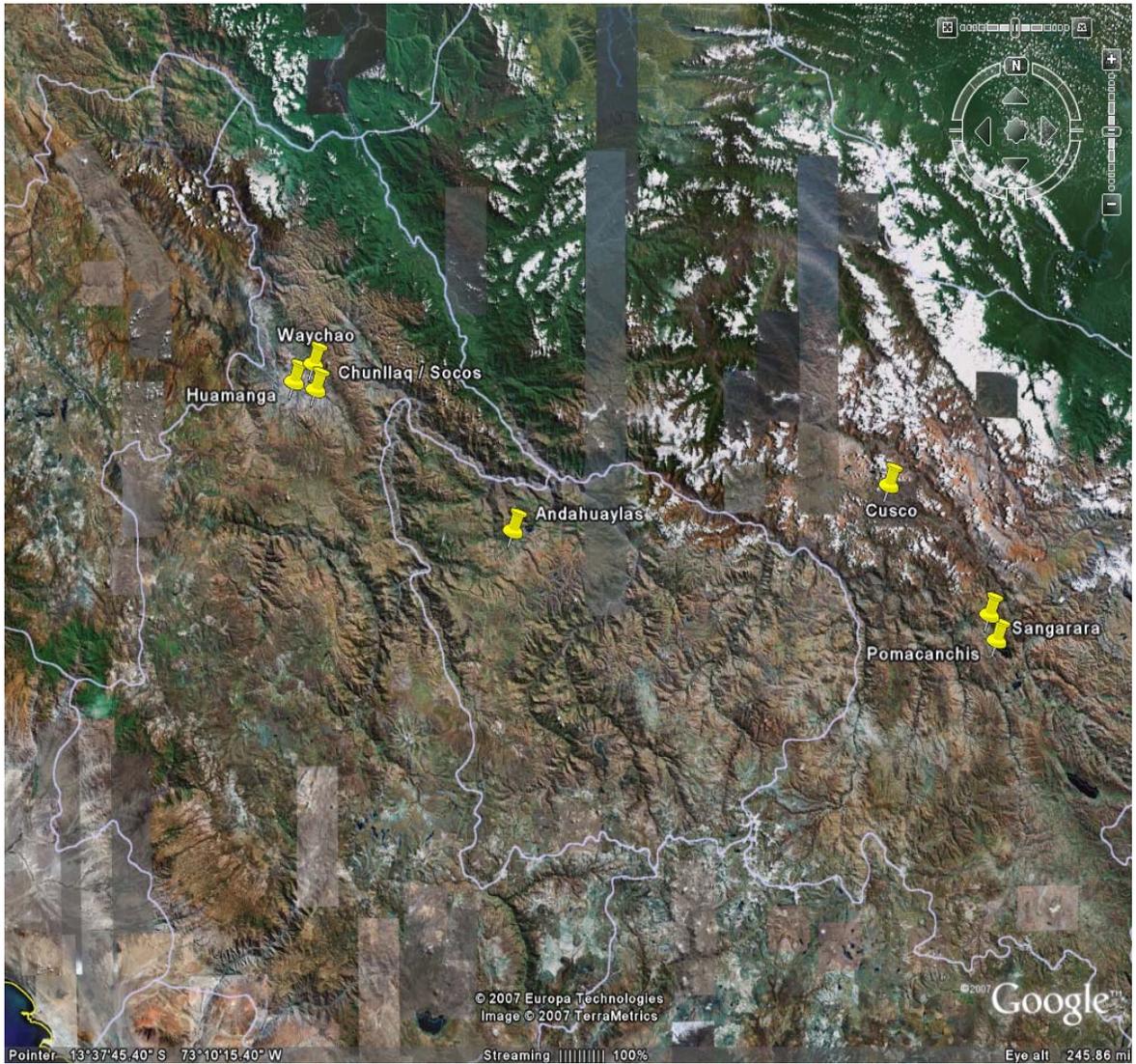
In Pomacanchis, I conducted the interviews at the local Health Center, where I spent the night. In Sangarara, the neighboring community I conducted the interviews randomly among those who wanted to participate. In the city of Cusco, I interviewed people in Spanish from the upper-class neighborhood of Magisterio.

In Waychao the interviews were done in the plaza or at the homes of participants. One of my sponsors, Professor Huisa had contacts there that were willing to participate. In Ayacucho, the interviews were performed in Spanish at the downtown markets and around the neighborhood of Mariscal Caceres, where I stayed with Prof. Tung and her research group.

Figure 9 - Peru and Locations of field work



Figure 10 - Zoom in Locations of field work



Instruments

The instrument used was the following questionnaire:

Questionnaire

Buenos días, estoy solicitando que forme parte de esta investigación porque estoy haciendo un estudio para aprender mas sobre el Tarwi y promover su consumo. Estudio en la Universidad de Vanderbilt en los Estados Unidos. Este estudio es parte de mi proyecto de tesis para la maestría. Va a ser entrevistado por mí y todas sus respuestas serán mantenidas anónimas. La entrevista tomara de 45 a 60 minutos. No hay riesgos al participar en este estudio, más allá de pedirle un poco de su tiempo para la entrevista. La humanidad y la ciencia podrían beneficiarse al conocer mejor a este cultivo tan nutritivo pero poco difundido. No hay beneficios personales al participar en este estudio. Si desea dejar de ser parte del estudio, comuníqueme al entrevistador que no desea responder más preguntas y la entrevista terminará inmediatamente.

Preguntas para la investigación comparativa de los factores culturales en el consumo de Tarwi y Quinua en las áreas urbanas y rurales del departamento del Cusco, Perú.

1. Sexo : 1=femenino 2=masculino
2. Idioma materno: 1=español 2=quechua 3=otro:.....
3. Estado socio económico
 - a. Vestimenta 1=indígena 2=urbana 3=otra:.....
 - b. Tipo de casa 1=adobe 2=ladrillo 3=otra:.....
 - c. ¿Posee televisión? 1=si 2=no ¿Cuántas?.....
 - d. ¿Cuántos hijos tiene?
4. Nivel de educación 1=puede leer 2=no puede leer
5. Edad :
6. ¿Le gusta la comida criolla? ¿Por qué? 1=si 2=no
Por que:.....
7. ¿Conoce el tarwi? 1=si 2=no
8. ¿Consume tarwi? 1=si 2=no
9. ¿En qué época del año lo consume? 1=todo el año 2=época de lluvias
3=época seca 4=otro:.....
10. ¿Qué es lo que prepara con tarwi? 1=caldo (sopa)2=segundo 3=otro:.....
11. ¿A qué hora del día consume tarwi? ¿Por qué? 1=mañana 2=mediodía
3=otro:.....
12. ¿Le ha caído alguna vez mal el tarwi al estomago? 1=si 2=no
13. ¿Siembra la planta de tarwi? 1=si 2=no
14. ¿Donde consigue la semilla?
15. ¿Cuanto tarwi produce en grano?
16. ¿Alterna la producción de tarwi con otro cultivo? 1=si 2=no
17. ¿Qué cultivo? 1=quinua 2=papas 3=otro:.....
18. ¿Le gustaría alternar la siembra de tarwi con otro cultivo? 1=si 2=no

19. ¿Compra tarwi? 1=si 2=no
20. ¿En qué estado lo compra? 1=seco 2=remojado
3=molido
21. ¿Donde compra tarwi? 1=mercado 2=tienda 3=otro:.....
22. ¿Cada cuanto tiempo compra tarwi? 1=mensual 2=semanal
3=otro:.....
23. ¿Come más, menos o la misma cantidad de tarwi que comía hace 2 años?
1=como más tarwi 2=como menos tarwi 3=como lo mismo de tarwi 4=no recuerdo
5=otro:.....
24. ¿Por qué cree que su consumo de tarwi ha disminuido/aumentado/ mantenido
igual/?
25. ¿Cree que el TLC afectara la cantidad de tarwi que siembra o consume? ¿Como?
26. ¿Utiliza el tarwi en alguna otra forma? ¿Para que otros propósitos?
1=delimitar la chacra 2=luchar contra los parásitos 3=otros:.....
27. ¿Sabe usted cuales son las características positivas del tarwi?
28. ¿Sabe usted cuales son las características negativas del tarwi?
29. ¿De donde es el tarwi?
1=Local 2=Perú 3=otro
30. ¿De donde es la quinua?
1=Local 2=Perú 3=otro
31. ¿Tiene familia en alguna ciudad grande?
1=Lima 2=Arequipa 3=Cusco 4=Huamanga 5=otra:.....
32. ¿Come tarwi su familia en la ciudad grande? 1=si 2=no
33. ¿Cree usted que la gente en otras regiones o países come tarwi? ¿Porque?

Preguntas comparativas sobre la quinua:

34. ¿Consume quinua? 1=si 2=no
35. ¿Siembra la planta de quinua? 1=si 2=no
36. ¿Compra quinua? ¿Donde? 1=Mercado 2=tienda 3=otro
(intercambia)
37. ¿Come más, menos o la misma cantidad de quinua que comía hace 2 años?
1=como más quinua 2=como menos quinua 3=como lo mismo de quinua 4=no
recuerdo 5=otro:.....
38. ¿Por qué cree que su consumo de quinua ha disminuido/aumentado/ mantenido
igual/?
39. ¿Utiliza la quinua para otros propósitos?
1=delimitar la chacra 2=lucha contra los parásitos 3=rotación 4=otro
40. ¿Si tiene familia en una ciudad grande, comen ellos quinua? 1=si 2=no
41. ¿Cree usted que la gente en otras regiones o países come quinua? ¿Por qué?

Preguntas generales finales:

- 42. ¿Cuales son los platos que mas consume?
- 43. ¿Comería más tarwi si supiera que se vende en los mercados más caros de Lima, Estados Unidos y Europa?

Comentarios:.....
.....
.....

Description of Data Analysis

The data obtained are displayed below in tables and charts to facilitate interpretation. Non quantitative data and other observations, obtained during the interviewing process and in other visits to houses and markets, will also be detailed as quotes and pictures to clarify the situation on the three departments studied.

CHAPTER V

FINDINGS AND ANALYSIS

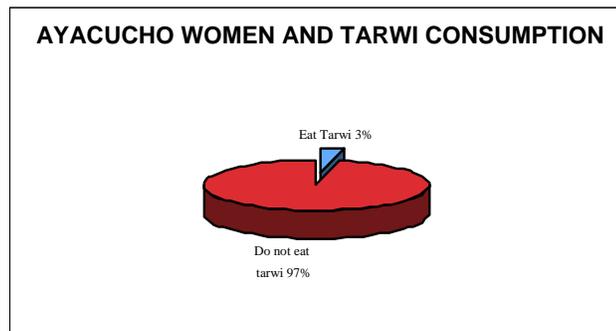
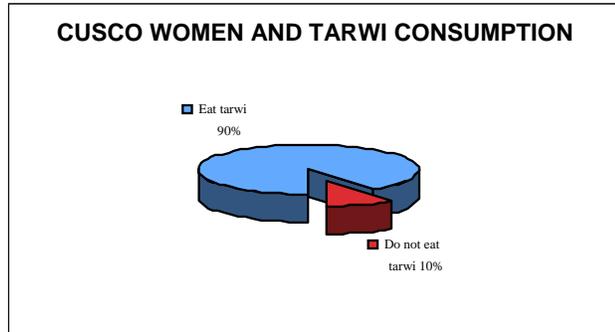
In this section tarwi consumption will be analyzed in relation to gender, socio-economic status, age, mother language, season, time of the day, cultivation, and seed source, according to the answers obtained in the interviews. Lastly, general patterns will be discussed such as tarwi consumption (compared to quinoa consumption and perception) and the most commonly eaten foods in the places visited.

Women and Tarwi Consumption

I compared the number of women who answered “yes” to tarwi consumption to those who answered no. In Cusco, almost every woman ate tarwi, compared to the women of Ayacucho, where almost nobody ate tarwi. Every woman from the small group in Andahuaylas ate tarwi.

Table 5 - PERCENTAGE OF WOMEN WHO ATE TARWI BY RESIDENCE AND DEPARTMENT

Cusco	Community / City	Eat tarwi	Do not eat tarwi	TOTAL
	Magisterio (Urban)	6	2	8
	Pomacanchis – Sangarara (rural)	21	1	22
Ayacucho	Huamanga (Urban)	1	9	10
	Socos-Chunllaq-Waychao(rural)	0	19	19
Andahuaylas (Urban)		4	0	4
Total Women		32	31	63

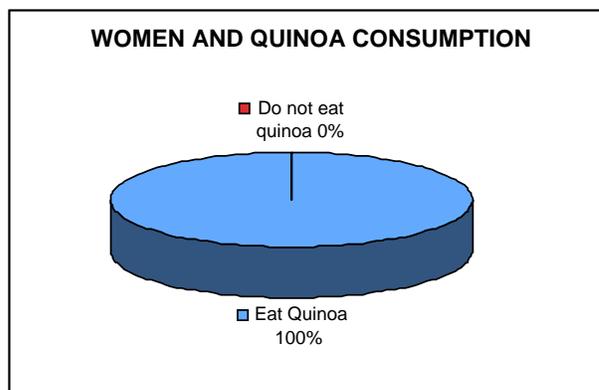


Women and Quinoa Consumption

Out of 63 women interviewed, 100 percent ate quinoa, no matter where they were from.

Table 6 - PERCENTAGE OF WOMEN WHO ATE QUINOA BY RESIDENCE AND DEPARTMENT

		Eat quinoa	Do not eat quinoa	TOTAL
Cusco	Magisterio (Urban)	8	0	8
	Pomacanchis – Sangarara (rural)	22	0	22
Ayacucho	Huamanga (Urban)	10	0	10
	Socos-Chunllaq-Waychao(rural)	19	0	19
Andahuaylas (Urban)		4	0	4
Total Women		63	0	63

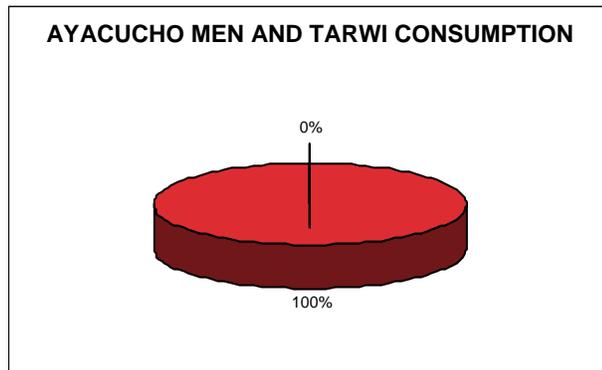
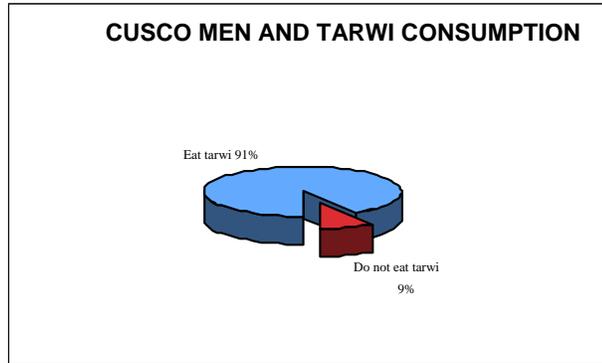


Men and Tarwi Consumption

The pattern of tarwi consumption for men followed that for women. The men of Cusco, in both urban and rural areas, mostly ate tarwi. In Ayacucho, no men ate tarwi. No men were interviewed in Andahuaylas.

Table 7 - PERCENTAGE OF MEN WHO ATE TARWI BY RESIDENCE AND DEPARTMENT

	Eat tarwi	Do not eat tarwi	TOTAL
Cusco			
Magisterio (Urban)	2	0	2
Pomacanchis – Sangarara (rural)	8	1	9
Ayacucho			
Huamanga (Urban)	0	2	2
Socos-Chunllaq-Waychao(rural)	0	9	9
Andahuaylas (Urban)	0	0	0
Total Men	10	12	22

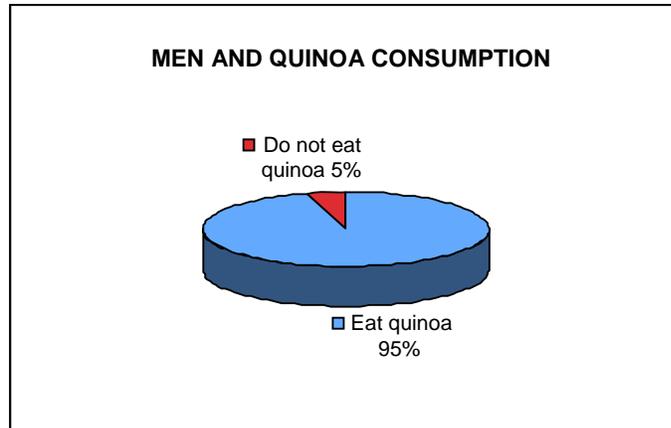


Men and Quinoa Consumption

Among the men interviewed, 95 percent ate quinoa. The one man who said he did not eat quinoa added that he was a widower and did not cook for himself.

Table 8 - PERCENTAGE OF MEN WHO ATE QUINOA BY RESIDENCE AND DEPARTMENT

		Eat quinoa	Do not eat quinoa	TOTAL
Cusco	Magisterio (Urban)	2	0	2
	Pomacanchis – Sangarara (rural)	8	1	9
Ayacucho	Huamanga (Urban)	2	0	2
	Socos-Chunllaq-Waychao(rural)	9	0	9
Andahuaylas (Urban)		0	0	0
Total Men		21	1	22



Socio - Economic Status and Tarwi Consumption

Most of the people interviewed fell into the low income category. This was reflected in the four socio-economic aspects evaluated, namely clothing, type of house construction and the material used, television ownership, and the number of children.

Table 9 - SOCIO ECONOMIC STATUS AND TARWI CONSUMPTION BY PLACE OF ORIGIN

Upper/Middle class		Eat tarwi	Do not eat tarwi	TOTAL
Cusco	Magisterio (Urban)	8	2	10
	Pomacanchis – Sangarara (rural)	2	0	2
Ayacucho	Huamanga (Urban)	0	6	6
	Socos-Chunllaq-Waychao(rural)	0	4	4
	Andahuaylas (Urban)	3	0	3
Total Upper/Middle class		13	12	25
Lower class				
Cusco	Magisterio (Urban)	0	0	0
	Pomacanchis – Sangarara (rural)	27	2	29
Ayacucho	Huamanga (Urban)	1	5	6
	Socos-Chunllaq-Waychao(rural)	0	24	24
	Andahuaylas (Urban)	1	0	1
Total Lower class		29	31	60

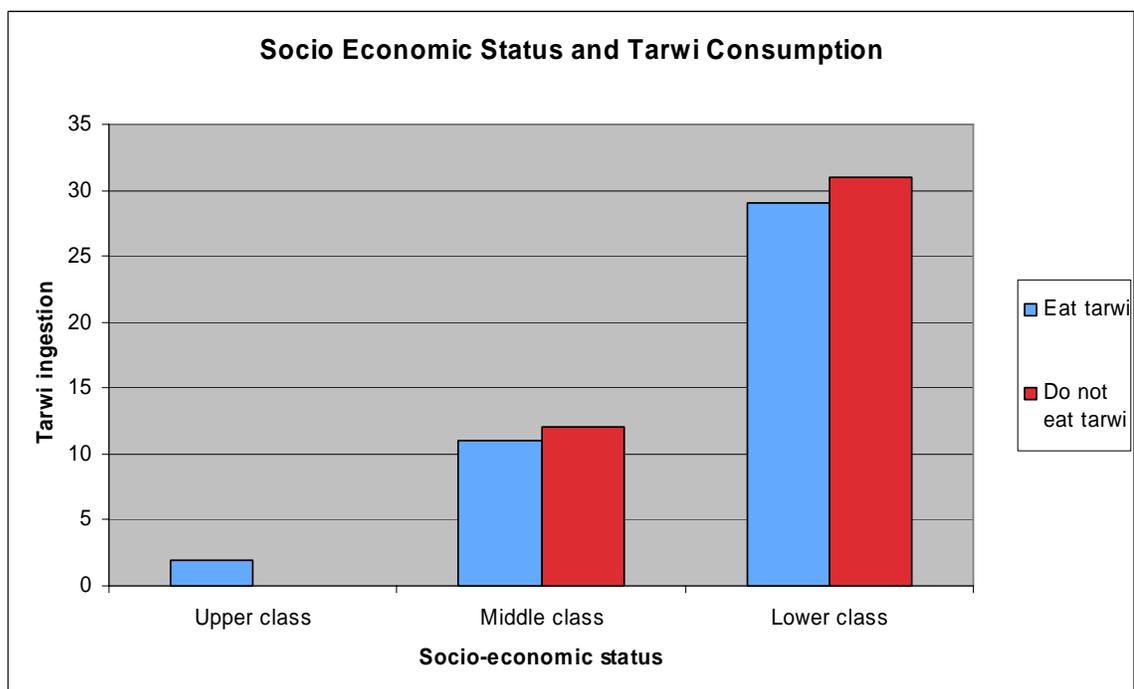
The highest numbers of tarwi eaters were among lower class people. As discussed previously we visited some of the poorest departments of Peru, these results confirm that fact. The lower and middle class were almost evenly divided into people who ate tarwi and people who did not eat tarwi. The rural communities visited in Cusco account for most of the positive answers among the lower class, while the rural communities visited in Ayacucho accounted for most of the negative answers.

Among the middle class, the pattern was more departmental than regional. For example, the majority of both rural and urban people from Cusco (and Andahuaylas) consumed tarwi, while the majority of people from Ayacucho, both rural and urban, did not eat tarwi. The exception in urban Ayacucho was a market woman who sold tarwi.

She had been married to an *Andahuaylino* and he taught her all the benefits of tarwi. She sold tarwi only by order to the *Andahuaylino* community in Huamanga. She specifically said she sold “sweet” tarwi to four *Andahuaylino* families, where the fathers or the mothers were doctors or nurses. She said it was easy to buy dried tarwi. She bought tarwi from Andahuaylas and Socos. Then she washed the tarwi in her house changing the water three times daily for three to five days. She started buying and selling tarwi in order to sustain her three children after her husband was killed in a terrorist attack.

Table 10 - SOCIO-ECONOMIC STATUS AND TARWI CONSUMPTION (simplified)

	Eat tarwi	Do not eat tarwi	TOTAL
Upper class	2	0	2
Middle class	11	12	23
Lower class	29	31	60



Age and Tarwi Consumption

The age cohorts utilized reflect life expectancy in Peru, which is 69 for men and 73 for women.⁸⁹ The categories were: young adults (18 to 31 years old), middle age adults (32 to 54 years old) and older adults (55 years old and up). In a few cases the persons interviewed did not know their age, so I asked other questions to calculate it indirectly.

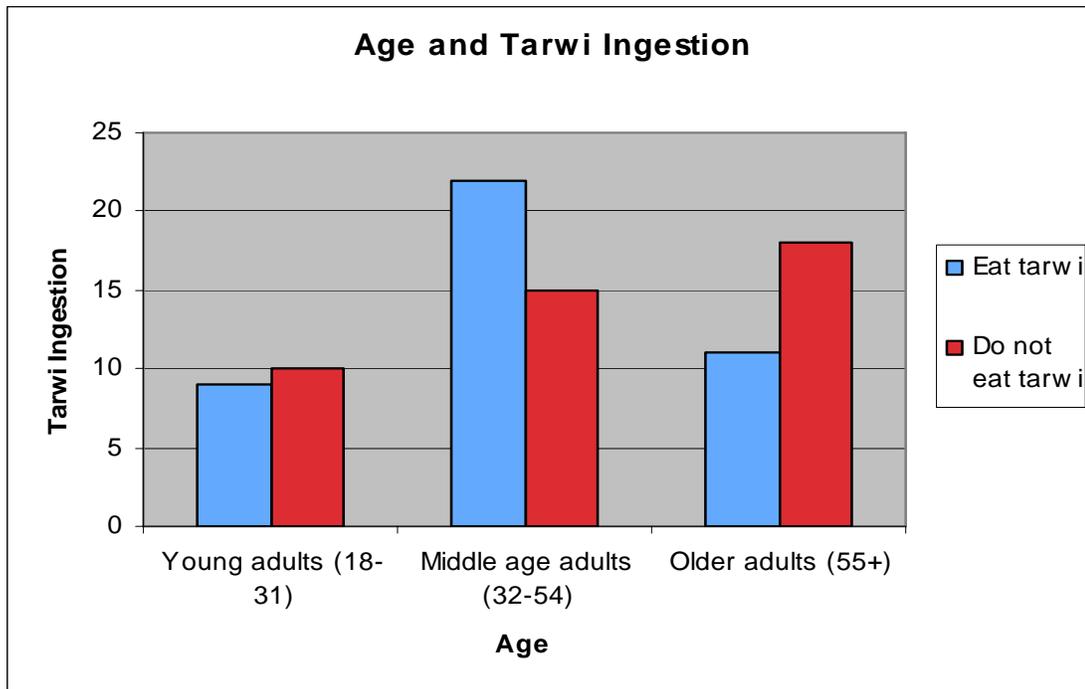
Table 11 - AGE AND TARWI CONSUMPTION

		Eat tarwi	Do not eat tarwi	TOTAL
Young adults				
Cusco	Magisterio (Urban)	1	0	1
	Pomacanchis – Sangarara (rural)	7	0	7
Ayacucho	Huamanga (Urban)	0	3	3
	Socos-Chunllaq-Waychao(rural)	0	7	7
Andahuaylas (Urban)		1	0	1
Total young adults		9	10	19
Middle Age adults				
Cusco	Magisterio (Urban)	5	0	5
	Pomacanchis – Sangarara (rural)	15	1	16
Ayacucho	Huamanga (Urban)	1	6	7
	Socos-Chunllaq-Waychao(rural)	0	8	8
Andahuaylas (Urban)		1	0	1
Total Middle age adults		22	15	37
Older adults				
Cusco	Magisterio (Urban)	2	2	4
	Pomacanchis – Sangarara (rural)	7	1	8
Ayacucho	Huamanga (Urban)	0	2	2
	Socos-Chunllaq-Waychao(rural)	0	13	13
Andahuaylas (Urban)		2	0	2
Total older adults		11	18	29

Table 12 - AGE AND TARWI CONSUMPTION(simplified)

	Eat tarwi	Do not eat tarwi	TOTAL
Young adults (18-31)	9	10	19
Middle age adults (32-54)	22	15	37
Older adults (55+)	11	18	29

In general the numbers seem to be balanced between tarwi consumers and tarwi non-consumers; however a break down by place of origin demonstrates again that most of the young adults and middle age adults eating tarwi were from Cusco. The ones not eating tarwi were from Ayacucho. The only exceptions were older adults. Some of the older adults interviewed who answered they did not eat tarwi anymore referred to the fact that once one gets old, tarwi is too “cold” to be digested.



Tarwi consumption and Language

The three departments where the interviews took place are known for their indigenous Quechua populations. Nonetheless, in urban areas, people speak Spanish; in rural areas they are either bilingual or speak mostly Quechua. In general, rural women are most likely to be monolingual and men are typically bilingual. Only urban dwellers from Cusco considered Spanish to be their mother tongue.

Table 13 - MOTHER LANGUAGE AND TARWI BY PLACE OF ORIGIN

QUECHUA		EAT TARWI	DO NOT EAT TARWI	TOTAL
Cusco	Magisterio (Urban)	1	0	1
	Pomacanchis – Sangarara (rural)	29	2	31
Ayacucho	Huamanga (Urban)	1	11	12
	Socos-Chunllaq-Waychao(rural)	0	26	26
Andahuaylas (Urban)		3	0	3
Total Quechua speakers		34	39	73

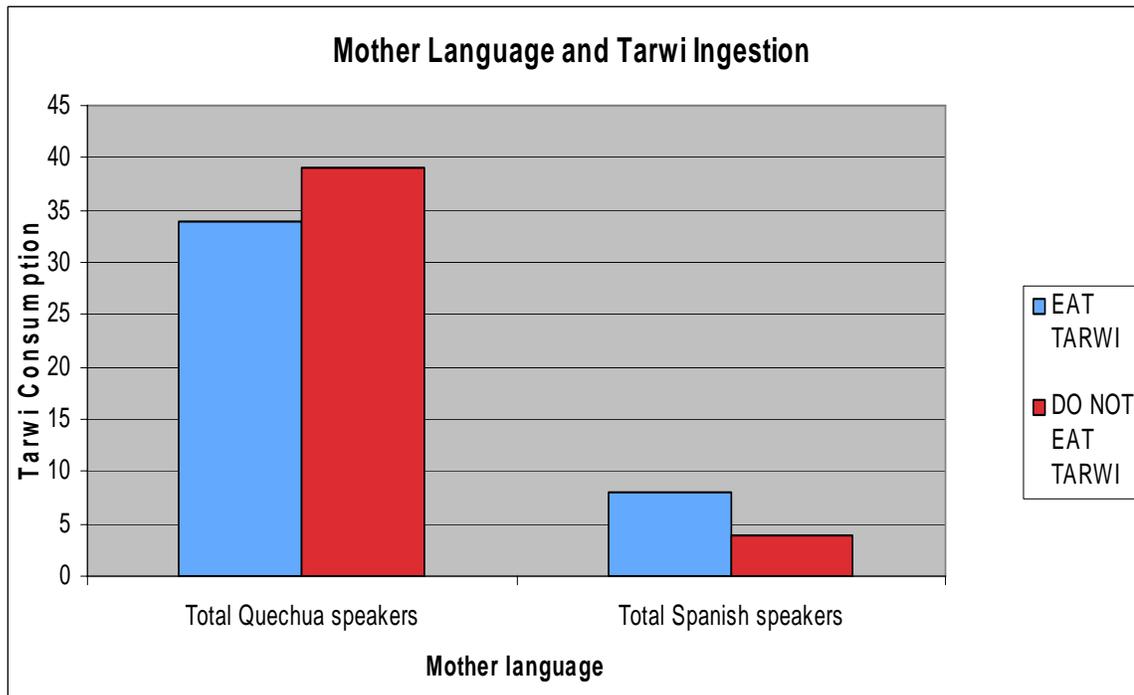
SPANISH		EAT TARWI	DO NOT EAT TARWI	TOTAL
Cusco	Magisterio (Urban)	7	2	9
	Pomacanchis – Sangarara (rural)	0	0	0
Ayacucho	Huamanga (Urban)	0	0	0
	Socos-Chunllaq-Waychao(rural)	0	2	2
Andahuaylas (Urban)		1	0	1
Total Spanish Speakers		8	4	12

Most of the people interviewed considered Quechua their mother language; however several were also fluent in Spanish. Among the people who considered

Quechua their mother tongue, more than half answered they did not eat tarwi (53.4 percent). The Quechua speaking people who answered they ate tarwi were from rural Cusco and Andahuaylas. The Quechua speaking people who answered they did not eat tarwi (46.6 percent) were mostly from rural and urban Ayacucho.

Table 14 - TARWI CONSUMPTION AND MOTHER LANGUAGE (simplified)

	EAT TARWI	DO NOT EAT TARWI	TOTAL
Total Quechua speakers	34	39	73
Total Spanish speakers	8	4	12



In Ayacucho, both, Spanish and Quechua speakers, do not eat tarwi. People from both urban and rural Cusco, and urban Andahuaylas in its majority ate tarwi.

Time of the year and tarwi consumption

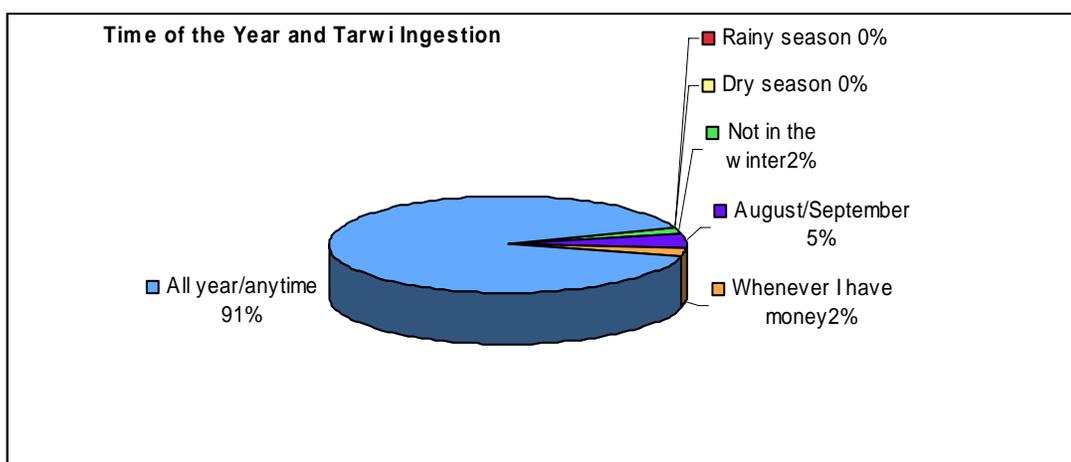
I analyzed the time of the year when the people were consuming tarwi. I took into consideration the seasons present in the Peruvian Andes, namely the dry season and

the rainy season. Because of the open-end nature of the questions, other responses given by the interviewees such as: “not in the winter”, “August – September”, “and when I have money”, were included in the table 15.

Table 15 - TIME OF THE YEAR AND TARWI CONSUMPTION

	All year/Any time	Rainy season	Dry season	Not in the winter (tarwi is too cold)	Aug-Sept.	Whenever I have money
Cusco Magisterio (Urban)	7	0	0	1	0	0
Pomacanchis – Sangarara (rural)	26	0	0	0	2	1
Ayacucho Huamanga (Urban)	1	0	0	0	0	0
Socos-Chunllaq-Waychao(rural)	0	0	0	0	0	0
Andahuaylas (Urban)	4	0	0	0	0	0
Total	38	0	0	1	2	1

Out of the 42 people who ate tarwi, 91 percent said they ate it year round or at any time of the year. They said seasons did not matter because they could save it dried until the next harvest season. Two people said they ate tarwi in August and September, which is the dry season in this area of the Peruvian Andes, and the end of the winter in the Southern Hemisphere. Conversely, one person in urban Cusco said she did not eat tarwi during the winter. The person who responded she ate tarwi only when she had money was a young single mother. She did not own any piece of land and did not have a job.



Time of the Day and Tarwi Consumption

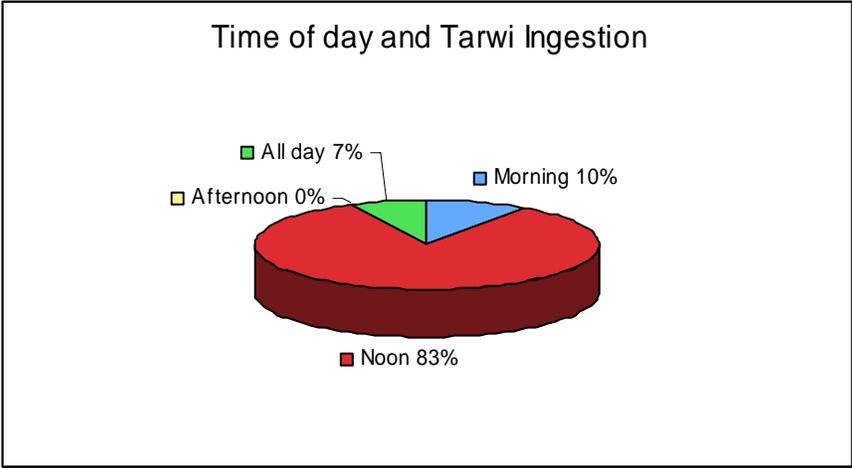
Following is the analysis of the time of the day at which tarwi was consumed.

Table 16 - TIME OF THE DAY AND TARWI CONSUMPTION

Time of day	Morning	Noon	Afternoon	All Day	TOTAL
Magisterio (Urban)	0	8	0	0	8
Pomacanchis – Sangarara (rural)	2	24	0	3	29
Huamanga (Urban)	0	1	0	0	1
Socos-Chunllaq-Waychao(rural)	0	0	0	0	0
Andahuaylas (Urban)	2	2	0	0	4
Total	4	35	0	3	42

Among the people who ate tarwi (42 individuals), 83 percent of them ate tarwi at around noon (*mediodia*), 10 percent in the morning (*en el transcurso de la mañana*).

Only 7 percent said they ate it any time of the day or all day. Among the people who answered that they ate tarwi in the morning or noon (lunch) the common perception was that tarwi would be too cold to be eaten when the temperatures drop (afternoon or early morning).

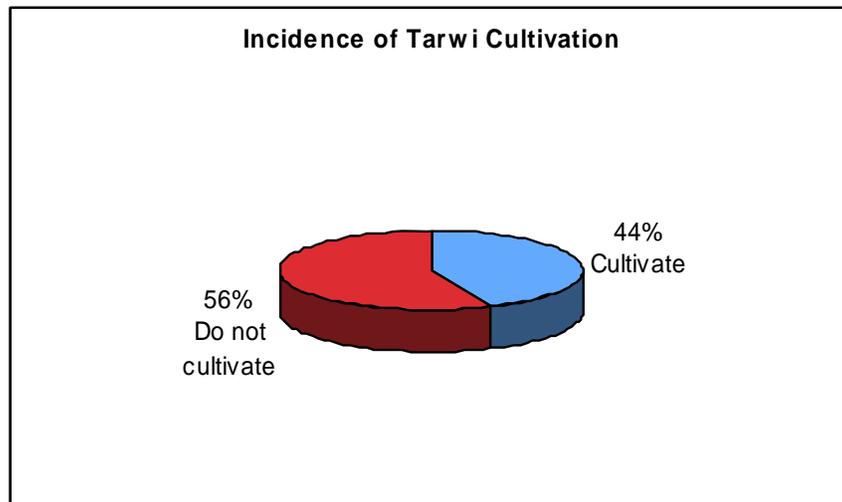


Incidence of Tarwi Cultivation

I analyzed the incidence of tarwi cultivation among the people interviewed in the three departments visited. Fifty six percent of the people interviewed for this study said they did not cultivate tarwi. Interestingly, 30 percent of the people interviewed in Ayacucho were cultivating tarwi, even though the same group of people said they did not consume tarwi.

Table 17 - INCIDENCE OF TARWI CULTIVATION

	Cultivates	Doesn't cultivate
Cusco		
Magisterio (Urban)	0	10
Pomacanchis – Sangarara (rural)	25	6
Ayacucho		
Huamanga (Urban)	3	9
Socos-Chunllaq-Waychao(rural)	9	19
Andahuaylas (Urban)	0	4
Total	37	48

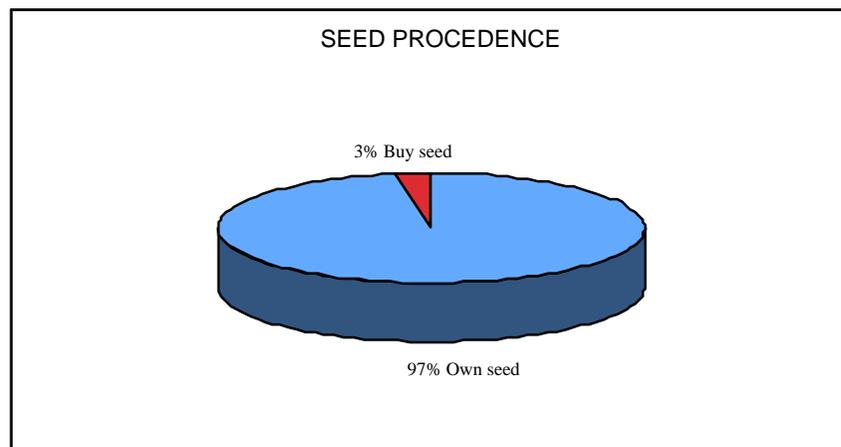


Tarwi Seed

Among the people who cultivated tarwi, only 3 percent answered that they bought their seeds. However, once the interviewer asked them from where, they said from the neighbors. The other people interviewed said they either saved some seeds from the previous year or bartered for some with the neighbors.

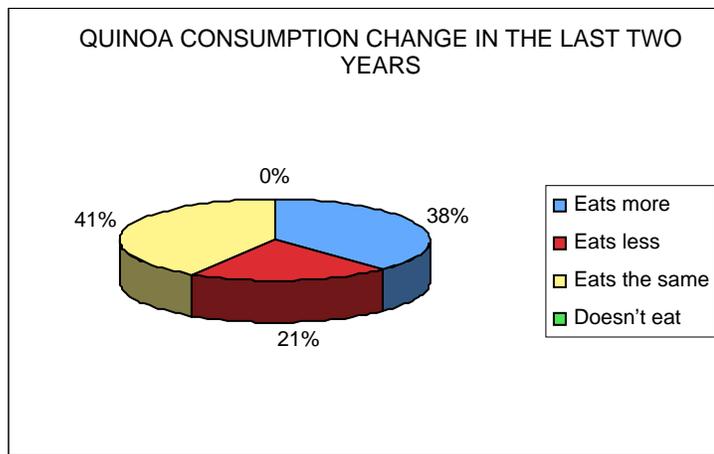
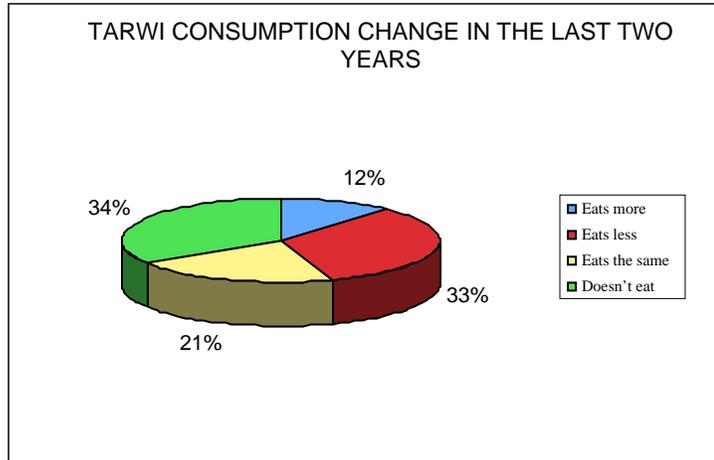
Table 18 - TARWI SEED PROCEDENCE

	Plant	Own	Buys
Cusco			
Magisterio (Urban)	0	0	0
Pomacanchis – Sangarara (rural)	25	25	0
Ayacucho			
Huamanga (Urban)	3	3	0
Soqos-Chunllaq-Waychao(rural)	9	8	1
Andahuaylas (Urban)	0	0	0
Total	37	36	1



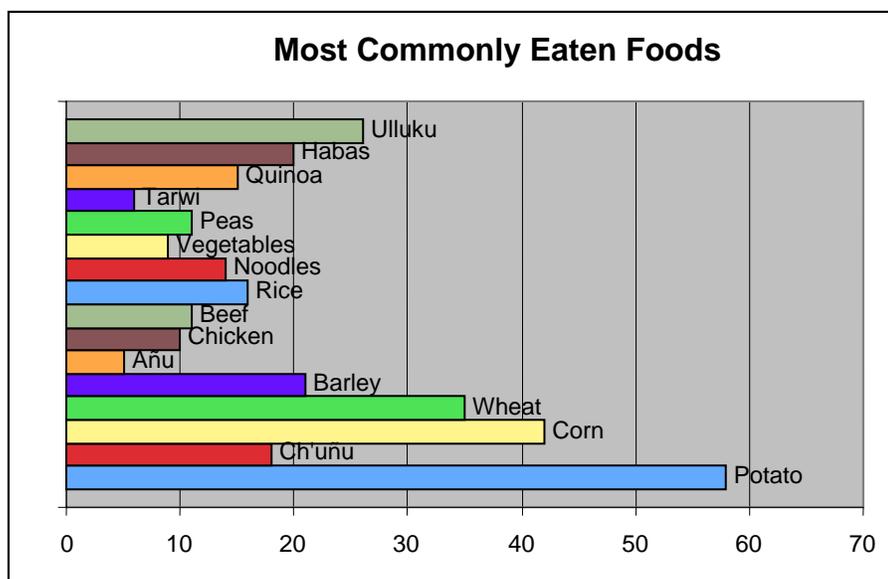
Tarwi Consumption and Quinoa Consumption

In the following charts we can appreciate the change in consumption patterns for tarwi and quinoa among the people interviewed. For tarwi, 67 percent of the people either did not eat tarwi or ate less than they used to, while for quinoa, 21 percent ate less or did not eat it. On the other hand, more people said they were eating more quinoa than before (38 percent) than people who said they were eating more tarwi than before (12 percent).



Most Commonly Eaten Foods

Among the people interviewed the most commonly eaten foods, for rural and urban people from the three departments were potato, corn, and wheat. Nonetheless, there were differences among urban and rural diets. Urban diets included animal protein sources such as beef and chicken, while rural diets consisted mostly of starchy grains such as wheat and barley.



In addition, tarwi was widely consumed in Andahuaylas, somewhat consumed in Cusco, but not consumed at all in Ayacucho. While interviewing rural people in both Ayacucho and Cusco, I was asked if I could stay for lunch and dinner on two occasions. In Cusco, I asked if we could eat tarwi that night. To my surprise the answer was that “tarwi was not food for guests, but reheated stale bread was.” In Ayacucho, a woman said she liked to plant tarwi because of its flowers. While interviewing an individual in the presence of his little son in Socos, he said he did not know how to prepare (get rid of the bitterness of) tarwi, but he was drying some tarwi seeds on its roof for the next year. He planted it around other crops so the neighbor’s sheep would not eat anything. Next to us, his son was using the dried branch with tarwi pods as a baby’s rattle.



Figure 11- Child playing with dried tarwi pods in Socos (rural Ayacucho)



Figure 12- Tarwi pods drying on the roof, Socos (rural Ayacucho)

Nutritional Situation in rural Ayacucho and Cusco

The diet favored by rural people in Ayacucho and Cusco is based on the number of “cold” or “hot” ingredients a dish or drink might have. A woman in Cusco said: “my mom says that tarwi is too cold, if you eat in the afternoon it will be hard to digest.”⁹⁰ In my interviews respondents rarely took into account the inherent nutritional value of the food they ate. If they did, they had vague notions, like the “vitamins” in tarwi help one

grow taller or stronger. No one mentioned tarwi's high protein content. I witnessed women in rural Ayacucho giving the "best" and "biggest" portions of food to their husbands and children. The result is often malnourishment for the women. One woman said: "I would only eat once everybody else [in the household] had enough food." Only right after childbirth, do women get soups with meat, as they need to "regain strength" and detoxify during the postpartum period. However, post-partum women's diets are usually very restrictive, excluding many available high protein sources such as beans, but including an occasional small piece of (jerky) meat, because of the notion that cold and heavy foods are not healthy. Post-partum women's diets consist mainly of bland soups and porridge.

Regulations against alcohol consumption are not strictly enforced, which along with the traditional practice of feasting in the Andes has serious repercussions, such as malnutrition, alcoholism, and domestic violence. Pomacanchis was "filled with drunk parents" according to a local interviewee. She added later that "the drunken men hit the women often and sometimes even hit the kids."

Food preference is related to identity. Indigenous people experience racism and discrimination whenever they go to Huamanga or Cusco (necessitated by the political and economic centralism). Part of this is a feeling of aversion to indigenous foods like tarwi.

A man interviewed in Pomacanchis said:

"Es que generalmente a veces como que somos nosotros de la sierra, a veces cuando vamos a otros sitios negamos ¿no? De que comemos tarwi, porque generalmente en las sociedades de las capitales de los departamentos, en las capitales del país, generalmente el hecho de comer productos serranos, a uno como que lo identifican y generalmente pues a veces nosotros siempre queremos salir de ese estereotipo que tenemos, y no ser serranos, queremos ser capitalinos nosotros también a veces. Tenemos esas deficiencias en cuanto a nuestra idiosincrasia."

A man originally from rural Cusco, but now living in urban Cusco, answering what was wrong with Andean crops and referring to the “*serrano*” (anything that is from the *sierra* region) stereotype in Peru said:

“no es solo el mismo campesino que sufre de eso [ser estereotipado como serrano] creo que sufrimos muchos de los que no queremos ser serranos sino queremos ser también parte de la gente de la capital, la gente que ya no quiere ser serrana... negar sus raíces no?”

This collision is evident in the way people in both environments refer to things related to indigenusness and to the sierra region of Peru (*lo Serrano*) and to things related to skin whiteness and to Lima (*lo capitalino*).

Hot-Cold System Interpretation

Since the food classification system has a major impact on nutrition, it is worth looking at it more closely. Some examples of how this classification works in the communities and cities visited in Ayacucho, Peru and Cusco, Peru are:

Table 19 - Examples of hot and cold Foods According to Popular Beliefs⁹¹

FOOD	COLD	HOT
Tarwi	X	
Quinoa	X	
Potato	X	
Maize	X	
Wheat	X	
<i>Chuño</i> (freeze dried potato)	X	
Barley	X	
Meat (Beef)		X
Pork	X	
Poultry	X	
Eggs	X	
Milk (boiled)		X
Beets		X
Peas	X	
Prickled pear	X	
Chilies		X
Chamomile infusion		X
Anise seed infusion		X
Coca leaves infusion		X
Black mint infusion (<i>hierbabuena</i>)	X	
<i>Huatacay</i> (herb)		X
<i>Muña</i> (herb)		X
<i>Trago</i> (Alcohol)		X

To balance “cold” and “hot” foods in a dish depends on a combination of factors. One’s health status at any particular moment plays an important role. If someone is healthy, she needs to prevent “coldness” entering her body by eating and drinking the right food. On the other hand, if someone has a cold or the flu, he should avoid “cold” foods. Instead the person should drink hot liquids such as coca tea.

Another element is the time of day when food consumption occurs. Cold foods should be avoided early in the morning or at breakfast. In the early afternoon, cold foods can be served in small portions followed by the ingestion of a hot drink (hot tea or

alcohol). In general, people preferred “hot” foods and dishes served warm—not surprising in a cool, mountain climate.

Eating Schedule Interpretation

The table below looks at the meal schedule in effect during the cool, dry season of July and August. It is based on the testimony of residents in the places visited. In the rural communities there were five meals. The meals varied according to the agricultural season.

Table 20 - Meal Schedule during one day in July- August (dry season) in a Rural Setting

Time	Meal	Example
5:00-5:30am	<i>Unu q’oni</i> (literally: water hot)	Hot sweet beverage <i>Tostado</i> or <i>Mut’i</i> ⁹²
6:00-8:00 am	<i>Almursu</i> (6-7am) (breakfast)	Hot soup, hot porridge
12:00-1:00pm	<i>Ch’akillu</i> (noon dinner)	<i>Tostado</i> , <i>Mut’i</i> , boiled potatoes, boiled <i>ch’uñu</i> , <i>uchu</i> (spicy sauce).
6:00 pm		Hot sweet infusion
6:30-7:00 pm	<i>Almursu/Comida</i> (evening dinner)	Papa <i>Uchu</i> (potato hot stew), Soup, left over from previous meals.



Figure 13- Breakfast in Waychao (Rural Ayacucho)



Figure 14- Dinner in Waychao (rural Ayacucho)

In urban areas the meal schedule is the same through out the year. They have three meal events per day. For families with children at the university or with members of the family working the ritual of the noon dinner is much more haphazard.

Table 21 - Meal Schedule during one day in July- August (dry season) in an Urban Setting

Time	Meal	Example
6:00-8:00 am	<i>Desayuno</i> (Breakfast)	Tea, wheat bread and jam, orange juice
12:00-1:00pm	<i>Almuerzo</i> (lunch)	<i>Caldo</i> (soup with pieces of vegetables and meat) Segundo (meat, rice, potatoes)
6:30-7:00 pm	<i>Comida</i> (dinner)	Tea <i>Churrasco</i> (thin steak) and rice



Figure 15- Lunch in Cusco (urban Cusco)

Food Markets Observations in Urban Ayacucho, Cusco and Apurimac

In order to have a better idea of the food consumption patterns of the places visited, I spent several days in many food markets in Ayacucho, Cusco and Apurimac. In Ayacucho, I visited the Playa Grau market, which is located six blocks away from the main square. Playa Grau market is adjacent to another similar market. In this market processed Andean crops are still sold, such as: dehydrated potatoes (ch'uñu, t'unta), dehydrated *ulluku*, kiwicha and quinoa. Fresh Andean crops such as local varieties of potatoes and corn, *ulluku*, and *lucuma* (Andean fruit), are sold. Tarwi was not sold in this

market. In Cusco, I researched the San Pedro market, located next to the train station to Machu Picchu, and around ten blocks away from the main square. This market displays many Andean crops and other traditional foods, both transformed and fresh. Furthermore exotic foods such as edible worms are available here. There are coca leaves vendors everywhere in the market. Four ladies sold “sweet” (washed) tarwi, either peeled or with its skin, in whole grain or blended. A bag with half a kilo of washed and peeled tarwi beans costs approximately thirty-two cents. So does a bag with half a kilo of tarwi paste (blended). In Andahuaylas, I visited the Central Market located three blocks away from the main square. In this market, they sold several Andean foods, fresh, processed, and also dishes made out of Andean crops. There were eleven vendors selling tarwi. It is important to consider that the size of this market was half the size of the markets visited in Cusco and Ayacucho. The tarwi vendors sold tarwi with skin, peeled, and blended. However, the blended options were: pure blended tarwi, and blended tarwi with *Huatacay*. The section of prepared food had two stalls selling Tarwi dishes (Tarwi stew and Tarwi soup).



Figure 16- *T'anta* (bread) vendor in rural Ayacucho market



Figure 17- Andean crops (mashua and ulluku) vendor in rural Ayacucho market

Kitchen Observations in Rural Cusco and Ayacucho

To better appreciate the dynamics of food preferences, two kitchens were analyzed in the communities visited: one in Sangarara (Cusco) and the other in Waychao (Ayacucho). Both rectangular kitchens were very dark, small, and detached from the house. Both places had tin roofs and a chimney. The people interviewed mentioned that if a kitchen had a straw roof, the smoke will pass through it and no chimney would be necessary. However, most of the straw roofs were owned by older adults; younger families tend to build their house with shingles or tin. The focus of the kitchen is the *q'oncha* (oven). The *q'oncha* is a kind of firebox built out of mud. It has a front opening through which the fuel, usually eucalyptus wood, cattle manure, or vegetable remains is deposited. On the top surface there are one to three burners. Nowadays, aluminum pots have replaced the traditional clay pots and spoons.



Figure 18- *Q'oncha* in Sangarara (rural Cusco)

The Cusco kitchen had six aluminum pots of different sizes; three of them were black because of the smoke. They also had a tea pot. Roaming around the kitchen were three guinea pigs and one hen. As to dishes, there were only various sized soup bowls. At the time of the interview, a lamb was being slaughtered. The woman eviscerated the carcass and salted every organ and part of the animal, and then put it aside to dry—except for the head, which they were cooking to make soup. They said the right way to eat lamb's brains was if they were very fresh, i.e. right after the slaughter of the animal. They were preparing *charki* or jerky lamb with the carcass of the lamb.



Figure 19- *Charki* Production in Pomacanchis (rural Cusco)

The kitchen in Ayacucho was even smaller and less elaborate. The firebox had only one burner. There were five pots, but they were smaller in size. Both kitchens had mainly metal cups, spoons, forks, and knives. The Ayacucho kitchen had some plastic cups and bowls and, buckets for water. The cupboard in Ayacucho had much more sugar stored than the one in Cusco. Sugar is a luxury. The family in Ayacucho had recently had some good luck. The husband had gotten a new job as a freelance driver. This meant a much higher income than before, when most of what they earned came from tending their land.



Figure 20- Kitchen in Waychao (rural Ayacucho)



Figure 21 - Food shelves in Waychao kitchen (rural Ayacucho)

As presented previously tarwi production is in decline, even though it has several nutritional potentialities for a country with malnourishment problems such as Peru. A woman in rural Ayacucho said: “We used to eat it as [if it were pop] corn.”⁹³ This is similar to the way in which today the women in Andahuaylas I interviewed were eating tarwi as boiled corn (mote). In Ayacucho, when I asked a family who were showing me

the tarwi they had drying on the roof if they ate tarwi, the man said to me: “do you eat it? If you know teach us!”⁹⁴

When I arrived in Ayacucho, it was National Independence weekend. Alan Garcia (2006), Peru’s new president, had just presented his inaugural speech, in which he did not mention any solution for the families who had been affected by terrorism.⁹⁵ I found many people remembering the violence and uncertainty of “those years.” In Socos a brutal massacre occurred in 1983 perpetrated by former National Guard members said to be hired by groups related to the government. The animosity against Garcia the day I arrived was at its climax after he omitted terrorism’s victims in his inaugural speech. Many interviewees in Socos digressed from the point of my interview (diet and tarwi) and instead talked about “those years”, euphemistically referring to the 1980’s, in which Ayacucho was Shining Path’s stronghold. It seemed as if my status as a non-local Peruvian in Socos represented a link with the “*lo capitalino*.” When asked about his diet, a Socos inhabitant responded “the diets as everything had changed with terrorism,” and that “they [the diet and life] were not the same.”

CHAPTER VI

CONCLUSIONS AND SUGGESTIONS

In Peru, eating meat is a sign of wealth since many people cannot afford it. Tarwi is an affordable Andean crop, but is often ignored. Tarwi consumption in Peru is location specific. In rural and urban Cusco, tarwi is still part of the diet of most people. Urban people buy it (from the open market) ready to use (washed and/or peeled) any time of the year. Rural people store it clean and dried in order to consume it all year long. Due to the hot cold system, tarwi is mainly eaten during the day and is usually followed (or accompanied) by a hot food, for example coca tea. Applying this folk system has its downside. According to my interviews, women put folk beliefs ahead of nutritional information, overall during pregnancy periods. Even though the New Andean Cooking Movement is adding prestige to Andean crops; tarwi has yet to benefit.

In Ayacucho, tarwi is not consumed. Most likely, this is a result of the disruption caused by a decade of virtual civil war. Even though some farmers still grew tarwi as a rotational crop, they were not eating tarwi. In urban Ayacucho, most *plazeras* (the women in the open markets) do not even sell it. Only one *plazera* had tarwi which she sold to the Andahuaylas community in Huamanga. Tarwi's fortunes were impacted, both directly and indirectly by the violent years of Shining Path in Ayacucho. This only heightened the collision between "*lo serrano*," the things endemic to the sierra and "*lo capitalino*," the things endemic to Lima. In that turmoil, tarwi's consumption, the knowledge about it, and the traditions associated with it were lost.

A very different scenario can be observed in Andahuaylas, a department with much less contact with "*lo capitalino*," than either Cusco or Ayacucho. In Andahuaylas

the tradition of tarwi consumption seems very much alive; several “*plazeras*” sold tarwi in different forms, from beans to paste.

Ayacucho, both rural and urban, seem to be most in need of strategies to revive tarwi production and consumption. On the production side that means farmer education plus improved tarwi seed, as has been done through hybridization, to obtain “sweeter” lines. To spur consumption, I propose an illustrated pamphlet with data about how tarwi should be processed and cooked.

Tarwi can take a lesson from quinoa. Much like tarwi, quinoa was once considered a second rate Indian food. Today however, is a highly regarded Andean crop. My interviews showed that almost everyone ate it both in rural and urban areas and across. Quinoa’s internationalization increased its prestige. It even shows up now in “*capitalino*” recipes and diets.

Local women used resources efficiently, especially in their kitchens. They used husks of corn and manure as fuel; they utilized every part of the animals they slaughtered. This reveals a way of life in synchronization with the environment and nature.

Given Cusco’s popularity as a tourist destination, I imaged it was too sophisticated for tarwi. My research showed that idea was erroneous. In Cusco, even middle class households eat tarwi in private meals, when there are no guests around. A more comprehensive study is likely to yield more surprises, especially as to how “*lo serrano*” is perceived in other regions of Peru and how this perception influences food preference. To bridge the “*serrano – capitalino*” gap, I worked on a pamphlet that explains how to prepare and cook tarwi. The pamphlet is easy to read; every step is illustrated..

The interplay between “*lo capitalino*” and “*lo serrano*,” whether it is restaurants in Cusco that serve Andean specialties, or migration from the sierra to Lima, affect how people view the food they eat. Andean crops are presumed to be eaten by *serranos*; the more *serrano* you are the more Andean crops you will consume. Andahuaylas, which has the least contact with Lima, was the place where tarwi was eaten openly and proudly. Cusco, although further from Lima, has many new “*capitalino*” businesses because of the tourist industry. This contact sometimes makes people ashamed to eat tarwi. In Ayacucho tarwi consumption has virtually disappeared, though it is not clear when or exactly why this happened. Out of the departments studied, Ayacucho is closest to Lima. Furthermore, it suffered more from terrorism than any other department in Peru. The result was broken families and a massive migration to the capital. Thus even secondary factors like civil turmoil and tourism, which act indirectly, still modify food preference and dietary choices. Finally, there are cultural factors not always visible to the naked eye, such as whether a food is inherently “cold” or “hot,” “male” or “female,” or a food fit only for the poor or acceptable for the middle class.

Appendix

PAMPHLET

In Ayacucho, respondents said they knew little about how best to prepare and cook tarwi. So they were always asking me—“Do you know? Can you teach us?” To help reinvigorate tarwi consumption, an informational brochure would be of great benefit. Given poor reading skills, the illiteracy rate for Ayacucho is 27.7 percent, such a pamphlet has to rely primarily on illustrations.⁹⁶

What makes for an attractive brochure? Features such as: paper weight, color, texture, print size and effective use of graphics and pictures.⁹⁷ Graphics stimulate the senses and thus the text becomes personalized. In the tarwi brochure every idea presented is followed by a picture or drawing. The pamphlet has several sections. The first presents tarwi as a crop. Then comes tarwi’s preparation, followed by its nutritional merits, and its versatile uses. Finally, there is a summary of important ideas about tarwi. Each section will have a different color or two colors if there are two different ideas within that section.

Below is my own version of how such pamphlet might look. It has eleven pictures and seven font colors.

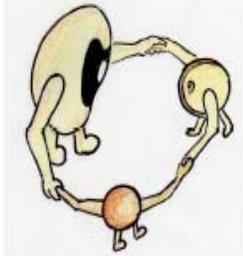
Front:

Recuerda:

Lavarlo para que no te duela el estómago.



Es mejor comer tarwi con quinua que solo.



Al ají échale tarwi.

Si lo guardas, que sea en un agua fría en un lugar frío hasta por 1 semana



Si sientes que tu tarwi esta amargo, aun no esta listo. Lávalo antes de comértelo.



Sandra Martinez 2006
Gracias: Sra. Miriam Cuentas.

EL TARWI



- FACIL DE PREPARAR.
- NUTRE.
- USOS.

Back:

Fácil de preparar.

1. Remojar por 6 horas. Dejar hervir por 45' minutos.



2. Dejar en agua corriente por 4 días. En un costal de tela que deje pasar el agua.



O en un lavador, cambiar el agua 3 veces/día por 5 días



3. Cocinar o secar.

Nutre.

Usar tarwi y quinua en vez de carne.



Es bueno para niños, mujeres encinta y que dan de pecho.



Usos.

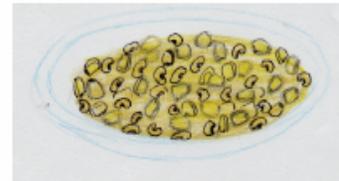
Desayuno: Moler en el batán. Esa harina echar a la mashika.



Almuerzo: A la sopa echar tarwi entero o molido.



Merienda: Comer con mote.



TRANSLATION OF THE PAMPHLET

Front

<p>Remember:</p> <p>Wash it so you won't get a stomachache.</p> <p>It is better to eat tarwi with quinoa than tarwi by itself.</p> <p>Add tarwi to your hot sauce</p>	<p>If you store it, it should be in cold water in a cold environment for up to 1 week.</p> <p>If you taste any bitterness in your tarwi, it is not ready yet. Wash it before eating it.</p> <p>Sandra Martínez Thank you Sra. Miriam Cuentas.</p>	<p>TARWI</p> <p>* HOW TO PREPARE IT</p> <p>* HOW IT NOURISHES</p> <p>* HOW TO USE IT</p>
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Back

<p>How to use it</p> <ol style="list-style-type: none">1. Soak it for 6 hours. Boil it for 45 minutes.2. Leave it in running water for 6 days in a cloth bag (that allows water to pass through). <p>Or in a bucket change its water 3 times/day during 8 days.</p> <ol style="list-style-type: none">3. Cook it or dry it.	<p>How it nourishes</p> <p>Use tarwi and quinoa instead of meat.</p> <p>Tarwi is good for children, pregnant and breastfeeding women.</p>	<p>How to use it</p> <p>Breakfast: mill it in the stone mill. Then add that flour to your porridge.</p> <p>Lunch: Add milled or whole tarwi to your soup.</p> <p>Afternoon snack: Eat tarwi seeds with "mut'i"</p> <p>.</p>
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- ⁴⁹ Santiago Erik Antunez de Mayolo, *La Nutrición en el Antiguo Perú*, (Lima: Banco Central de Reserva del Perú), 1981, 84
- ⁵⁰ José Luís Lescano Rivero, *Genética y Mejoramiento de Cultivos Altoandinos*, (Puno: PIWA), 1994, 107.
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- ⁷⁶ PER is used to analyze protein quality. It compares initial and final weight of an individual after ingesting such protein. Often PER is evaluated as percentage PER casein, because of casein's high efficiency ratio.
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- ⁸⁶ The lower content of alkaloids would not present a major disadvantage due to the fact that peasants practice rotational agriculture. In order to prevent pests' buildup they plant small patches of several crops, rotating them seasonally, and skipping a year periodically.
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- ⁸⁹ World Health Organization, "Countries: Peru" [home page on-line]; available from <http://www.who.int/countries/per/en/>; Internet; accessed September 8th 2006.
- ⁹⁰ "mi mama dice que el tarwi es fresco, si comes en la tarde te va a caer bomba."
- ⁹¹ The foods listed are known by the inhabitants of Soqos and Waychao. Not all of these foods are eaten on a daily basis. Meat is eaten only during important celebrations.
- ⁹² Tostado= toasted dried maize / mut'i= boiled dried maize
- ⁹³ "Antes comíamos crudo como si fuese mote."
- ⁹⁴ "¿se come? Si sabes enséñanos!"
- ⁹⁵ Alan García Pérez, "Mensaje a la Nación del Señor Presidente Alan García Pérez: Es la Hora del Pueblo,"

⁹⁶ Perú, Instituto Nacional de Estadística e Informática, *Información Sociodemográfica*.

⁹⁷ K.L. Clark., et al, “Text and Graphics: Manipulating Nutrition Brochures to Maximize Recall,” *Health and Education Research* 14, no. 4 (August, 1999), 556.