



Factibility project of Pelechucos production system

The following plan is the second part WSPA 's project for the Pelechuco area. The first stage included the construction of 46 shelters. In addition to building another 24 shelters in August (already approved) this plan proposes an additional water management system along with a pasture supplement production greenhouse.

This document intends to measure the benefits, costs and logistical issues faced by the producers at the Andean Plateau vs the feasibility of the system to improve their livelihoods and AW of the alpacas

The construction of a system that is accessible for the local producers and at the same time provides AW for the Alpacas in the way of better fodder and water access, but friendly with the environment; has always been the focus of the work WSPA has been doing at the plateau.

The initial 46 shelters were constructed in order to improve the Alpacas body condition, especially for those pregnant females and young animals, causing a diminishment of mortality and abortions and hopefully an improvement at the long run of the alpaca's fiber quality and thus the prize per pound.

1. Shelter construction

- a. The cost to make one module is 565 USD, this includes materials and transportation, labor should be provided by the beneficiaries, whom may be already trained by those owning a shelter (for these 24 shelters WSPA will provide technical support and construction costs)

Image right: Completed shelter. Shelter with straw and geo. membrane roof. A plastic corrugate material can be used instead to improve durability.



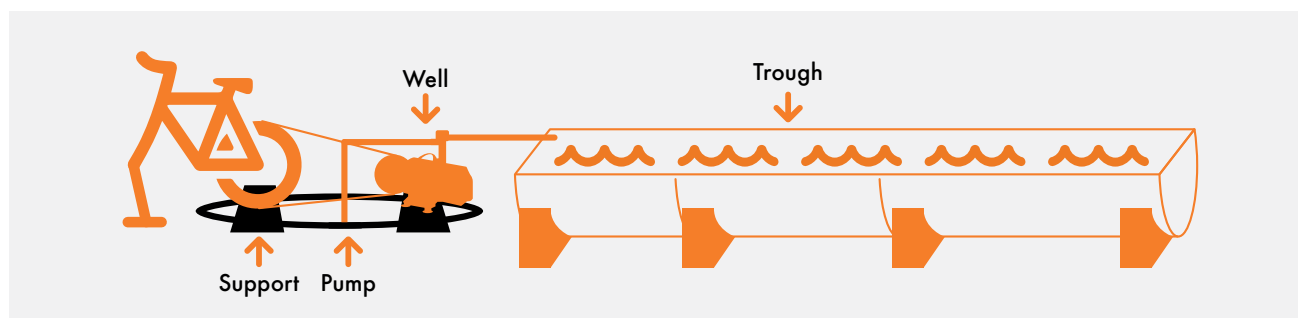
2. Water gathering systems

- a. The construction of “rustic water well” is a key requirement for maintaining a pasture plot and water must to be provided in a daily basis to the Alpacas (2-3 liters per day each).
- b. Rustic water wells in Pelechuco could cost around **500 USD** to build, the subsoil water in the plateau is less than 2 meters deep, and therefore the well should have no problem reaching this level.
- c. A family owns in average 70 to 100 alpacas or more, this amount of animals need approximately 200 to 300 liters per day; therefore, is necessary to build a system that can pumps the well for the animals. This system needs to be able to work in a daily basis using water from the subsoil reservoirs. Although many options exist for rain water harvesting, or roof harvesting, they would require additional intensive labor and budget increases. (See annex 1)
- d. The proposed system for Pelechuco is a **water well**, is thought to be able to harvest water from the underground, it is made of one cylinder water pump, attached to a fixed bicycle through a rubber band. The pump will have PVC pipes going from the well to a trough where animals could drink water, an additional line should go to the greenhouse or plot for irrigation under a dripping system in order to save as much water as possible.



Upper image: Water well showing the depth of the water table of the region.

Inferior image: This bike-pump-stand & tubing could cost 700 USD; the trough made of concrete half pipes and stone bases and for 10 meter long could cost 500 USD. For a total of: 1200USD

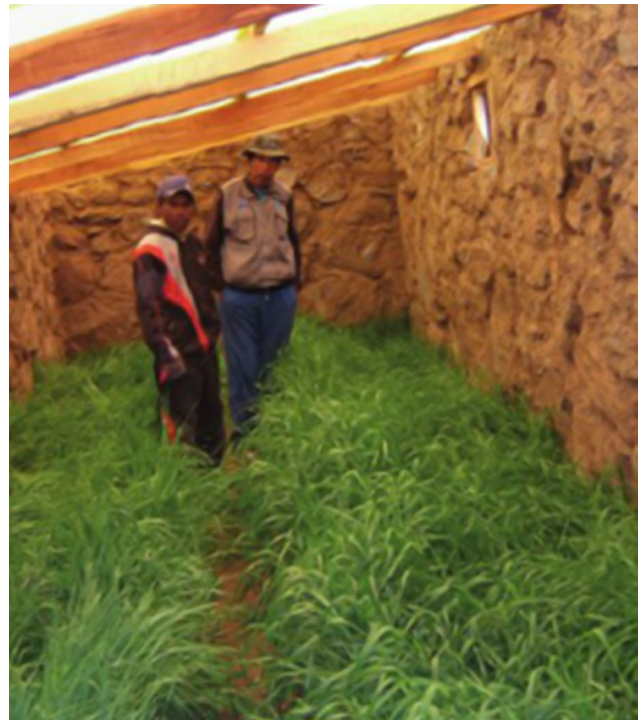


3. Greenhouse or underground plot

- a. The extreme weather on the plateau makes almost impossible to grow pastures in a regular way, using this weather proof greenhouse, dug below ground level with a roof that harvest the sun light for a warmer night, allows the production of pastures or greens all year around. Its walls keep moisture evaporation to a minimum, A dripping system can also be used to increase the use of water.

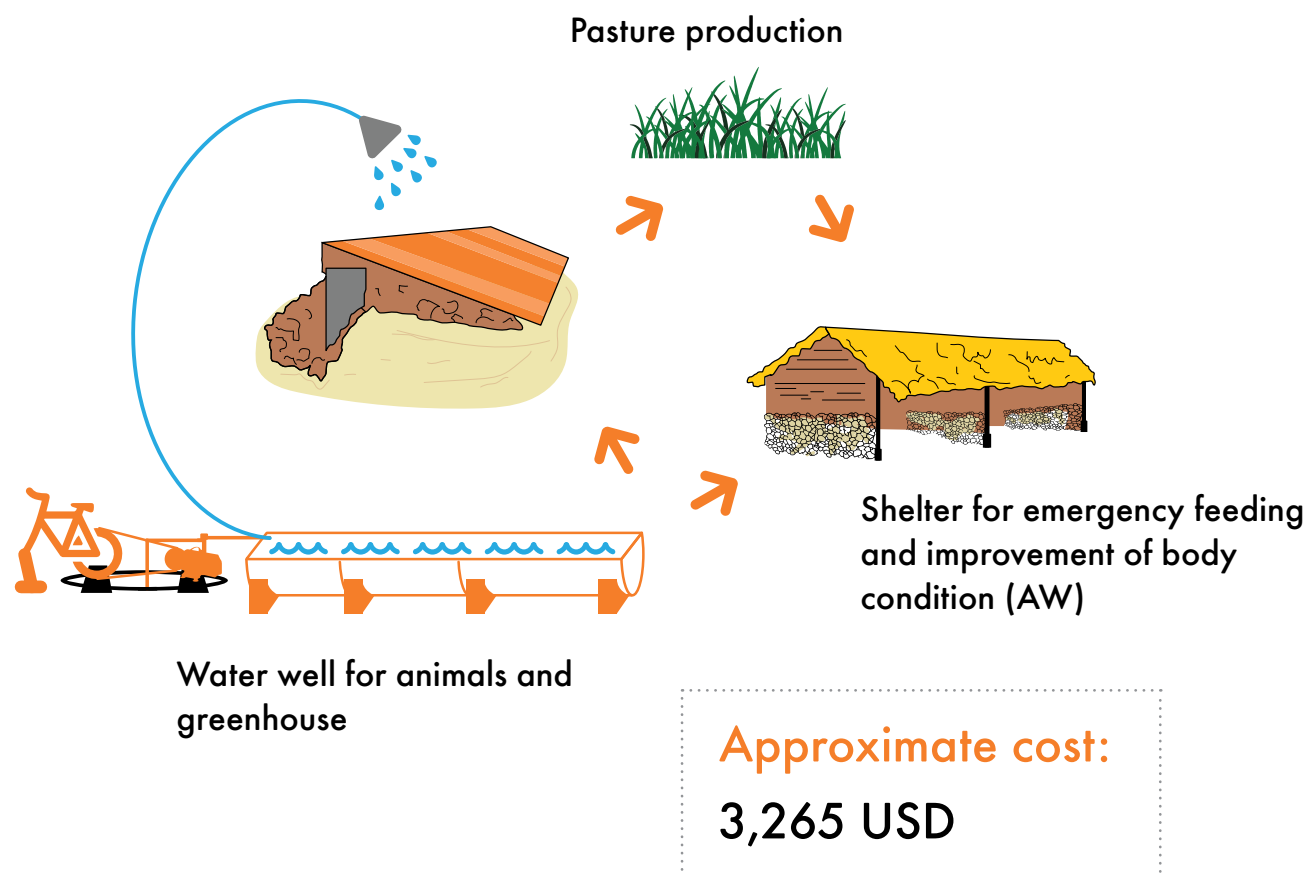
The cost for a unit OF 13 meter long by 4 meter wide is between 700 to 1000 USD, the area available for planting is 52 sq meters, depending on the type of pasture, water and fertilizer available, the bio-mass can be calculated.

- If using TRITICALE,(a hybrid between wheat and rye very tolerant to weather changes, high in protein and large bio-mass per ha.) under perfect conditions (daily irrigation, monthly fertilizer administration and good temperatures)8 to 15 tons of pasture per hectare can be obtained In 52 square meters, every cut could provide 75 kg of pasture, enough to make 2 to 3 haystacks every two months.
- An Alpaca can survive with a 2% of its live weight of fodder per day, this means 0.6 kg of fodder per day for the average animal at Pelehuco.
- The production of the wallipin could feed then, 2 to 3 alpacas a day for two months before the new haystack is harvested.
- **Issue:** the average ammount of animals per family is around 70 to 100 alpacas; therefore, the wallipin could serve only to storage food during the year in order to be used during extreme emergencies where mortality rates increase rapidly. This will provide help for pregnant females and new born, allowing them to survive during these extreme seasons, normally from November to February and March.
- Other choice is to make larger units , however this may be not feasible.



Upper images: Wallipin(greenhouse) made by FAO at the plateau, showing pastures production.

Picture 1: Final proposed pilot production system for Pelechuco



Expected benefits

System benefits

The greenhouse for pasture production and the shelter are designed to provide protection from the cold, fodder for pregnant animals and baby alpacas only, during the hardest months when winds, cold, haze and rain makes a difficult time for the alpacas. The system is intended to decrease the mortality rate (hunger, disease and cold).

The target is to increase the survival rate in no less than 15 % of babies and 5 % of milking or pregnant females. (Conservative numbers after initial documentation at Pelechuco where 20 % of babies die every season and 10 % of females die of suffer diseases and abortion)

The water well is thought to provide liquid for the greenhouse but also clean water for the Alpacas, reducing mortality and

disease in young animals caused by contaminated and stained water by stomping and mining washing. The target here is to lower GI infections and improve body condition; diminishing death of at least of 5% of young (not baby) alpaca.

In an 80 alpaca herd, the mentioned percentages translate in the survival of: 12 babies, 4 females and 5 young alpacas for a total of close to: 21 animals per season.

This could translate in a future increase in fiber production of 84 pounds of fiber, or 600 kg of meat for an additional income of: 252 USD for fiber or 450 USD in meat.

Replication costs

According data from shelter construction technical staff and local representatives, the roof, made of a mix of hay straw, mud, stones and plastic membrane, could deteriorate faster due to persistent rain and winds. Although this may not be the case in every structure, a choice for producers chosen as shelter beneficiaries could be offered, for them to change the roof during future constructions or replace it once it reaches its life span.

To cover the roof with zinc or translucent fiber shields, are necessary to purchase 9 shields of 6 meter long with a cost of 180 USD. This cost should be covered by the producers. Other than savings or secondary jobs budgets, the producers possible only choice could be to sell some of their animals.

In order to cover 180 USD, what would be the best way to sell Alpacas in Pelechuco?

As the area is a very remote place, selling among them is not usual as trading breeding stocks among them is normally done, selling live animals to outsiders means a logistical and expensive effort as well, producers do sell live animals at borders fairs (PERU-BOLIVIA) but under low prices.

Local producers tend to use the Alpaca for survival and eat them in a regular way, the trade of meat is limited for the same logistic issues mentioned above, plus the lack of sanitary infrastructure for certification. A producer who wants to sell the meat in order to invest in the roof will get an average of 0.75 USD per Kg of meat at the international market, locally this price may drop to half that amount; however we will keep the price as the international rate.

An Alpaca can weight 50 KG in average, in Pelechuco due to constant adverse conditions the weight averages from 25 to 35 kg. (For the study, we will leave the higher weight) The performance of Alpaca carcass yield is 52% with a relation of meat to bone of 4:1- which means that a producer can get 18 kg of meat per animal and a final cash flow of 13,5 USD per animal.

Therefore: A producer should have to sacrifice 13 Alpacas and find the market locally for this meat in order to cover the cost of roofing a shelter.

Second choice: Live Alpacas selling

The price for a baby Alpaca is estimated in 50 USD, an adult Alpaca worth's more money if it is a Female, selling two females for a 100 USD each could do it, however, locally is most likely not possible due to their nature of trading instead of purchasing and their limited income.

An external market must be found, this requires extended traveling and expenses that needs to be considered by the producers before engaging. (ex. transportation of animals to other markets where they can get a higher prize, fodder, personal expenses costs, etc.).

Suggestion: Producers need to find buyers locally, which is going to give them a lower price for their animals or invest time and money building a market structure, which will require external help.

Average income:

At Pelechuco, Men normally flee to other regions in search of secondary jobs, women are left in charge of the animals; it is unknown how much money these opportunistic and seasonal jobs provide for the family, but it has been said that serves only for family survival and very little is destined for the animals' care.

This migration, also causes that little attention is put on improvement of production techniques; at the region, these bad animal handling techniques plus the lack of spare time due to the mentioned migration, causes that shearing is made every two years instead of once a year, causing not only a diminishment on the quantity of fiber but also a detriment in the fiber quality! This in turn, reduces the value of the pound of fiber; also, the intermediaries put their own prize and make their own visual and tactile diagnosis of the quality, without technical equipment, exacerbating the problem.

The prize for the fiber depends on quality and color, the market at border fairs where they trade and sell their products averages 3USD per Pound of White fiber, and 2 USD per pound of colored fiber.

The average production of fiber reaches 4 pounds every two years with an earning between 8 to 12 USD per animal every two years.

Even that, it could be expected that the amount of fiber should be more after two years without shearing, documentation shows that the poor body condition and limited fodder causes that fiber not only does not increase its volume, but rather it gets thinner, weaker, breaks easily, finally losing much of its heat retention qualities and therefore their most value asset for textile enterprises.

An average producer at Pelechuco owns 80 Alpacas, then, the yearly income goes from: 320 USD to 480 USD depending on colors (being white the best paid).

This again is counting with a best scenario where they get paid for a second class fiber. The practice gives us examples of producers getting paid half of this amount.

Factibility comparison

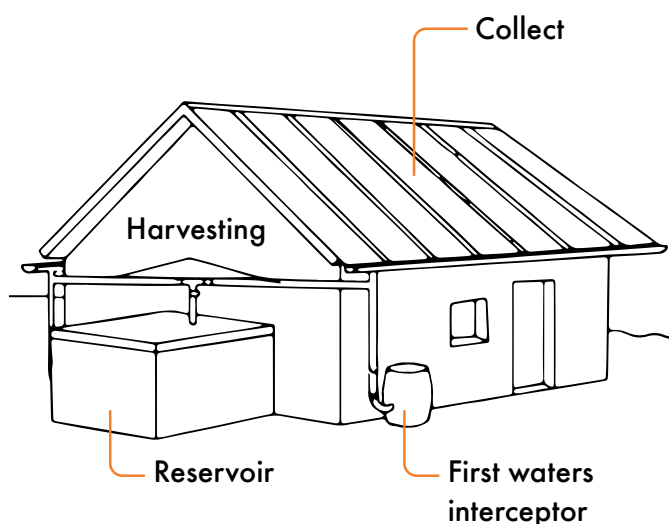
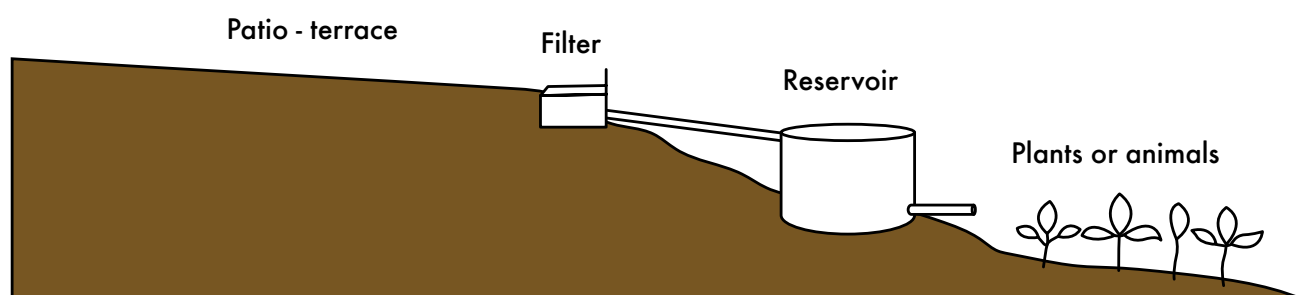
As it can be estimated after measuring cost, benefits and projections; In the best case scenario the system could provide an increase on the family income anywhere between 300 to 450 USD (based on the decrease in the mortality rate), this amount is similar to the yearly income a producer already have with the alpacas production; which means that they could have a 50 % increase on their yearly income if they use the system.

The cost of the "system" however, is definitely prohibited for the producers, this investment will need 6 years of work just to install it!, Therefore the set up should be made by local Humanitarian NGOs in order to create a pilot that can be sustained and proven for at least 2 years , allowing the production different cycles to complete; and then present it to the government for adoption if estimated numbers are fulfilled.

Annex 1

Other systems that can be considered included the terraces-surface water collector, this choice requires concrete surfaces and large water reservoirs other than strategically sites with 2% pendants. (See below)

The terrace could feed a reservoir or in the case of Pelechuco, a levee can be build in order to provide irrigation (dripping system) for an X pasture plot, suited for the region(TBD by agronomics experts). This levee should be large enough to provide water during the driest months.



A second example could be to use the roof as water collector; however this would necessarily need to change the shelter roofs design. In both, the main issue should be the size of the reservoir, which would have to supply water for more than 7-9 months; this again requires a larger investment. Therefore it was determined that the Water Well is the best option for this particular project.



Imagen: Women and their alpacas at the Andean region of Bolivia.

We are World Animal Protection

We end the needless suffering of animals

We influence decision makers to put animals on the global agenda

We help the world see how important animals are to all of us

We inspire people to change animals' lives for the better

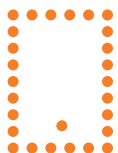
We move the world to protect animals.



World Animal Protection
Oficina Regional para Latinoamérica
y el Caribe

Apartado Postal: 516-3000

Heredia, Costa Rica



Tel: +(506) 2562-1200

Fax: +(506) 2562-1200



Email: infoLA@worldanimalprotection.org

Facebook: /proteccionanimalmundial

Twitter: @MovemosalMundo

Youtube: /proteccionanimalmundial

► www.worldanimalprotection.cr