Origin, Diversity and Territories Forum

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# Interpreting quinoa farmers' perspectives in the Peruvian Andes


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# CONTEXT

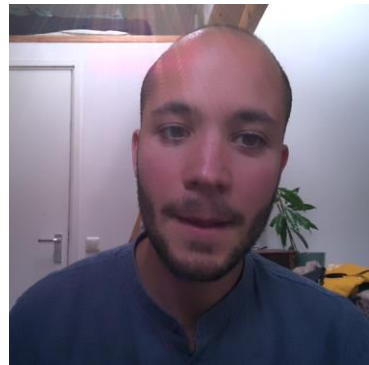
Quinoa (*Chenopodium quinoa* Willd.) was domesticated more than **7000 years ago in the Andes** (Bazile et al. 2016).

Quinoa gained global importance due to:

- Excellent **proteins and vitamins quality** (Repo-Carrasco et al. 2003; Navruz-Varli & Sanlier 2016)
- **Tolerance of abiotic stresses** passing from smallholder in the Andes to worldwide farming systems (Ruiz et al. 2014; Murphy et al. 2016).

Quinoa
2013 International Year

There is a challenge for promoting the **recognition** of the Andes (Peru, Bolivia, Chile, Ecuador, Argentina) as the **center of origin of quinoa crop against new areas of production** (Bazile et al. 2014).

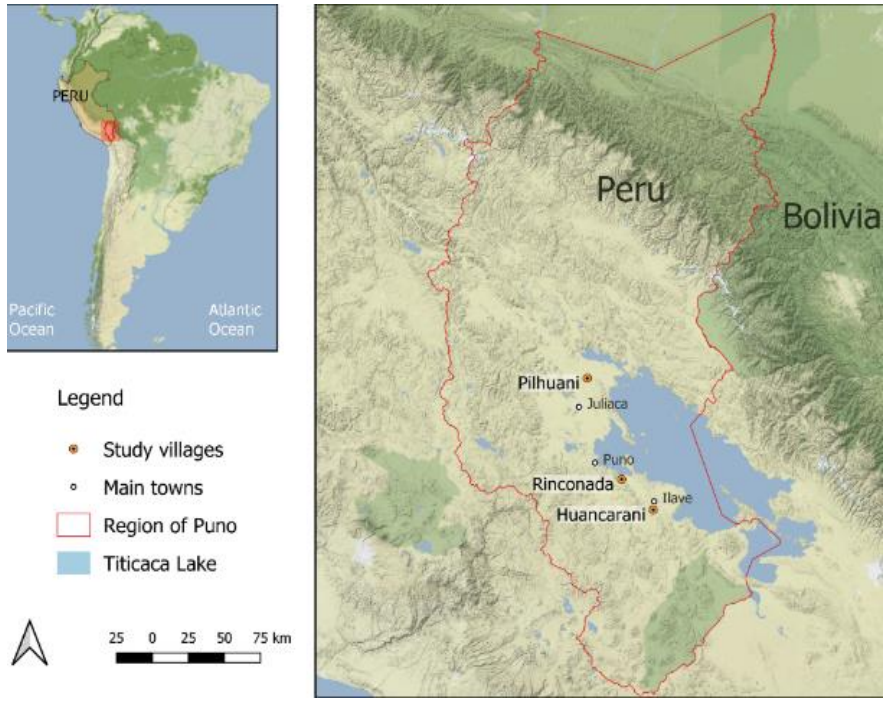


# OBJECTIVES

Categorizing the **place of origin of quinoa**, the **systems diversity**, and the **organization of the territory** to valorise Altiplano Andean quinoa in the global market.

*Through*

***Functional tipology*** is used to « capture decision-making by farmers given their constraints, as well as their behaviour in the face of chancing socio-economic situation» (Tittonell et al. 2020).




Map source: Andreotti et al. 2020


https://www.youtube.com/watch?v=nC-fSd1e2hA

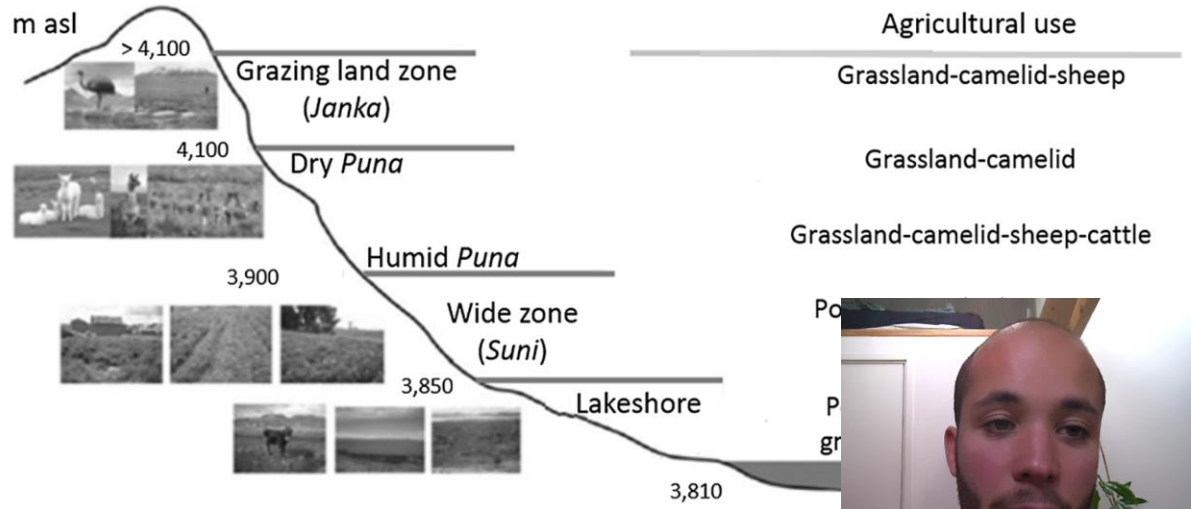



**Fig. 1** Agroecological zones for the Peruvian Altiplano, adapted from Tapia

# METHODS

1. **Baseline-survey**

2. **Four-square method for quinoa varieties** (adapted from Grum et al. 2003)

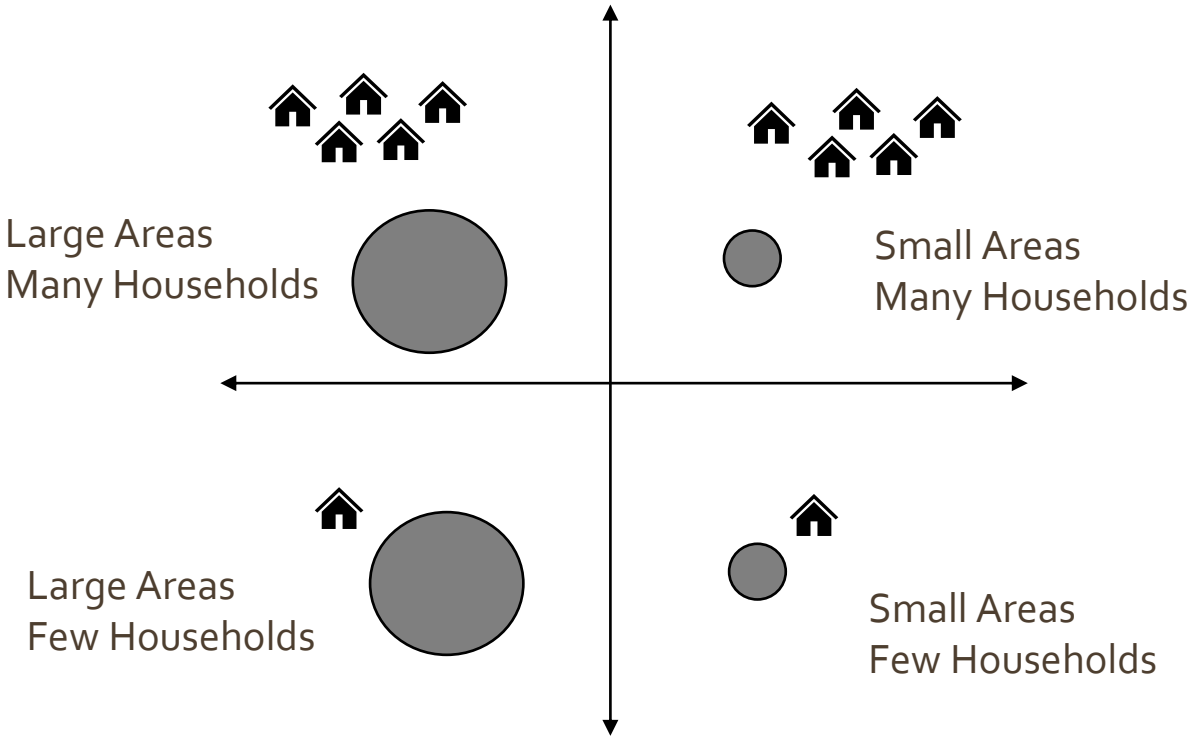




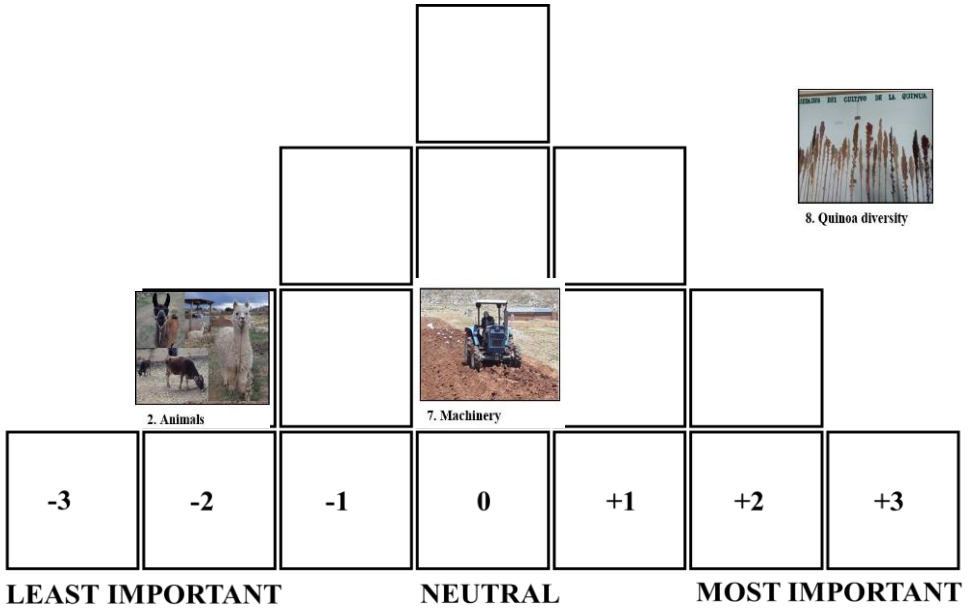
Figure source: Neher 2020; Andreotti et

# METHODS

3. **Visual Q-methodology** (Adapted from Alexander et al. 2018)


Cards number 5 picture is adapted from Latorre Farfàn 2014

Figure source: Andreotti et al. 2020




- Q methodology analyze **correlations between subjects over a sample of variables** that cluster groups respondents into factors according to the way they sorted out their statements.

- Analysis made using `qmethod` package in

# RESULTS

*In the village of Huancarani*

| Age | Gender | Study level | Production practices: organic | Quinoa destination: retailers | Quinoa destination: local market | Q-sort factor loadings: factor 1 | factor 2 | factor 3 |
|---|---|---|---|---|---|---|---|---|
| 58 | M | Secondary | x | x | x | **0.696** | -0.066 | 0.054 |
| 60 | M | Secondary | x | x | x | **0.726** | 0.197 | -0.383 |
| 62 | M | Secondary | x | | x | **0.631** | 0.212 | -0.292 |
| 49 | M | Secondary | x | x | x | **0.789** | 0.258 | -0.044 |
| 36 | F | Primary | x | x | x | **0.494** | 0.225 | 0.407 |
| 77 | M | Primary | x | x | x | 0.440 | **0.752** | 0.014 |
| 73 | F | None | x | | x | **0.676** | -0.318 | 0.275 |
| 53 | M | Secondary | x | x | x | **0.796** | 0.244 | 0.078 |
| 28 | F | Primary | x | x | x | -0.002 | **0.558** | 0.396 |
| 65 | F | None | x | | | -0.039 | **0.750** | -0.155 |
| 27 | M | Secondary | x | x | x | **0.763** | -0.088 | -0.157 |
| 19 | M | Secondary | x | x | x | **0.624** | 0.198 | 0.281 |

1. Functional typology -> Archetype:

***Traditional producers and consumers***

Q Results:

+3 cultivation of quinoa diversity

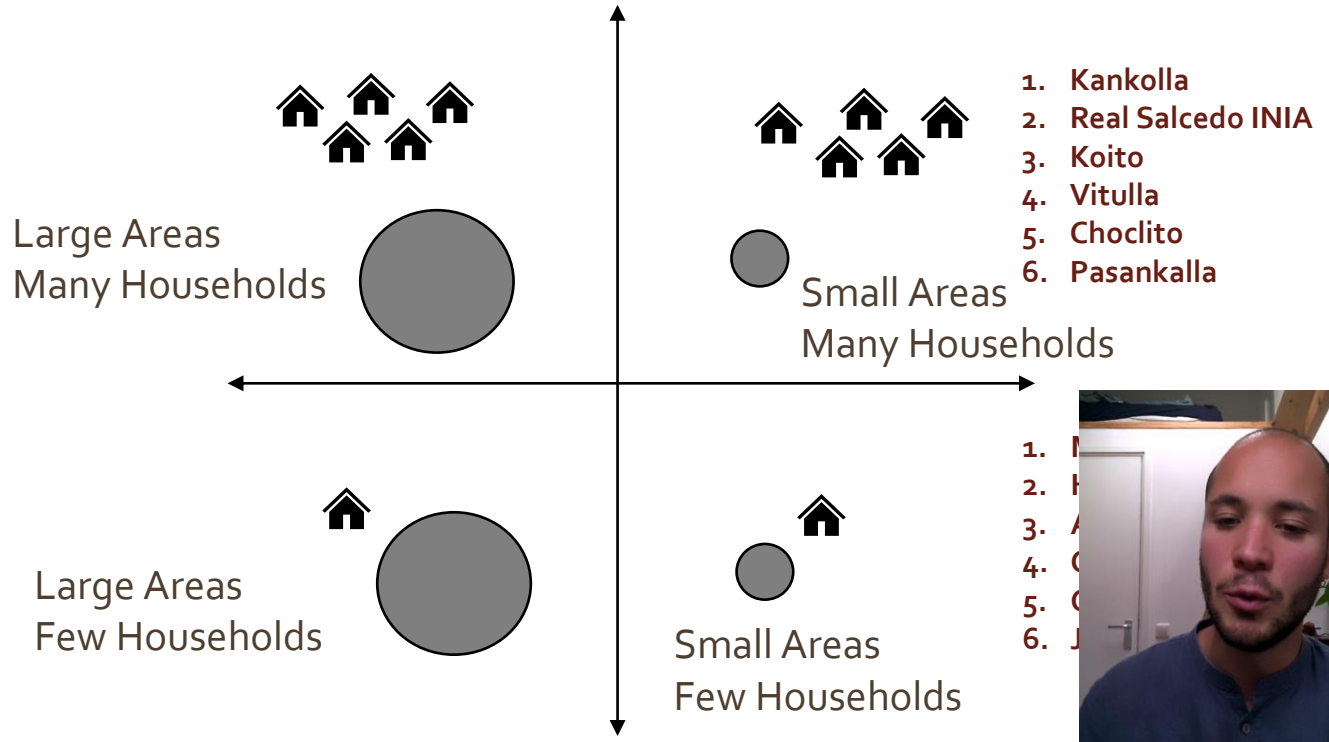
+2 integrate animals in the farming systems

+2 quinoa collective trademark

-2 quinoa export

-2 sell quinoa to the local market

-3 utilization of pesticides



# RESULTS

*In the village of Rinconada*

| Age | Gender | Study level | Production practices: organic | Quinoa destination: retailers | Quinoa destination: local market | Q-sort factor loadings: factor 1 | factor 2 | factor 3 |
|---|---|---|---|---|---|---|---|---|
| 35 | F | Secondary | x | | x | 0.562 | 0.278 | 0.579 |
| 53 | F | Primary | x | | x | 0.050 | 0.050 | -0.334 |
| 45 | F | Secondary | x | | x | 0.404 | -0.483 | 0.059 |
| 39 | F | Secondary | | | x | -0.115 | **0.689** | 0.470 |
| 69 | F | Primary | | | x | -0.032 | -0.190 | **0.765** |
| 60 | M | Secondary | | | x | 0.123 | 0.066 | 0.430 |
| 78 | M | None | x | | x | -0.075 | **0.665** | 0.172 |
| 73 | M | None | x | | x | 0.513 | 0.249 | 0.499 |
| 43 | F | Secondary | | | x | 0.191 | 0.134 | **0.775** |
| 58 | F | Primary | | | x | -0.289 | -0.095 | **0.728** |
| 70 | F | None | | | x | **-0.567** | 0.384 | 0.059 |
| 71 | M | Primary | x | | x | **0.770** | 0.136 | 0.088 |

2. Archetype: ***Business oriented women***

Q results:

+3 quinoa export

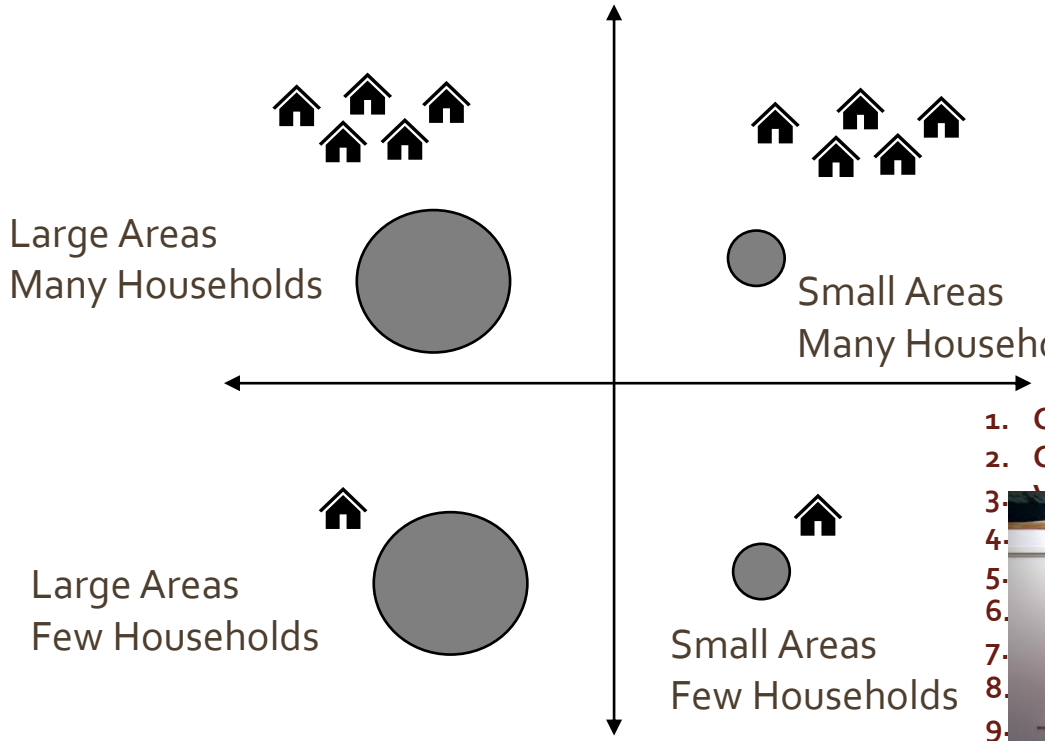
+2 collective trademark

+2 improve technology for water

-2 Animal integration in the farming system

-2 Tourism

-3 sharing quinoa seeds




1. Canihua
2. Cheveka
3.
4.
5.
6.
7.
8.
9.

# RESULTS

3. Archetype:

***Producers aiming for intensification***

Q results:

+3 storage for quinoa

+2 quinoa export

+2 certified seeds and improved varieties

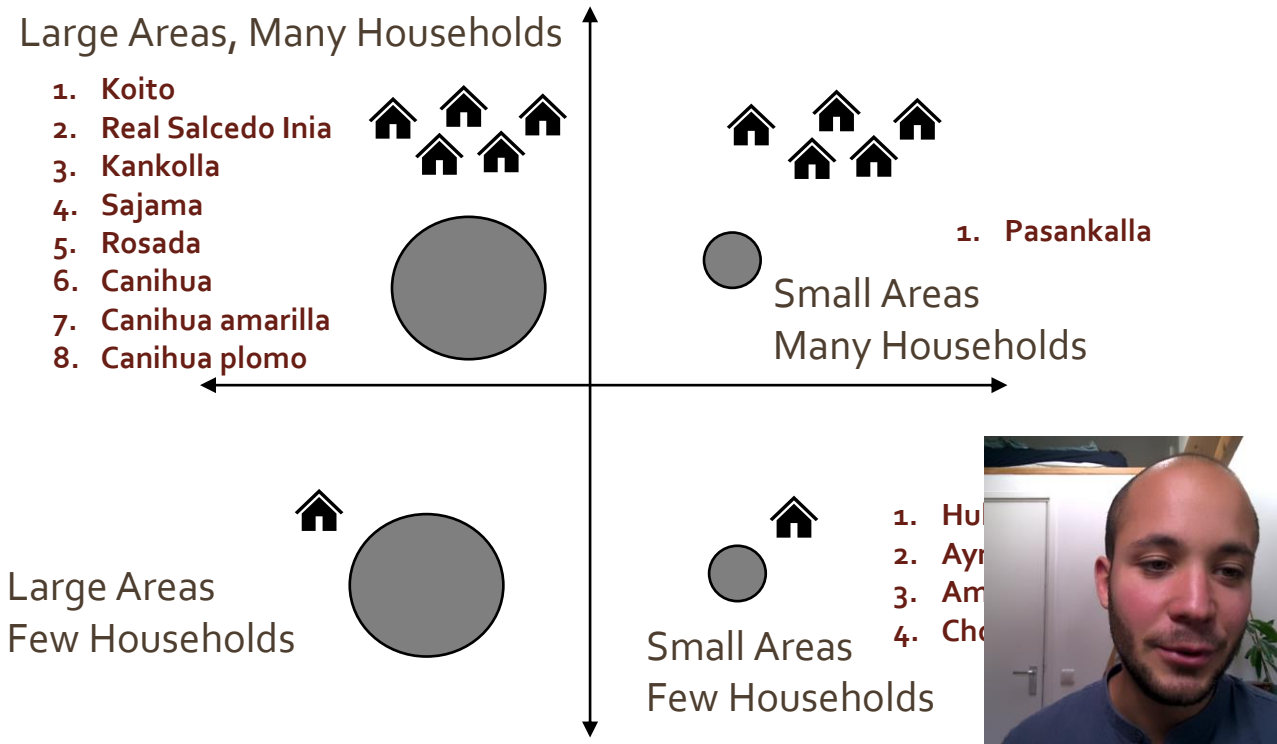
-2 handicrafts

-2 quinoa collective trademark

- 3utilization of pesticides

*In the village of Pilhuani*

| | Q-sort ID | Age | Gender | Study level | Production practices: organic | Quinoa destination: retailers | Quinoa destination: local market | Q-sort factor loadings: factor 1 | Q-sort factor loadings: factor 2 | Q-sort factor loadings: factor 3 |
|---|---|---|---|---|---|---|---|---|---|---|
| Village c | 25 | 60 | M | Secondary | x | x | | 0.494 | **0.533** | -0.168 |
| | 26 | 64 | M | Primary | x | x | x | **0.515** | 0.437 | 0.078 |
| | 27 | 55 | F | Secondary | x | x | | **0.540** | 0.196 | 0.038 |
| | 28 | 45 | F | Primary | x | x | x | 0.314 | -0.095 | -0.019 |
| | 29 | 62 | M | Secondary | x | x | | **0.629** | 0.149 | 0.333 |
| | 30 | 68 | F | Primary | x | x | x | 0.064 | **0.736** | -0.207 |
| | 31 | 51 | M | Prmary | x | x | x | 0.108 | **0.746** | 0.005 |
| | 32 | 46 | M | Secondary | x | x | | 0.312 | **0.831** | -0.079 |
| | 33 | 57 | M | Secondary | x | x | x | 0.355 | 0.446 | -0.366 |
| | 34 | 51 | F | Primary | x | x | x | 0.274 | **0.680** | 0.077 |
| | 35 | 42 | M | Secondary | x | x | x | -0.125 | **0.628** | -0.500 |
| | 36 | 57 | M | Secondary | x | x | | 0.126 | 0.333 | 0.208 |



# DISCUSSION & CONCLUSIONS

- We apply a Q-method for functional typology obtaining 3 archetypes:

1. ***Traditional producers and consumers***
2. ***Business oriented women***
3. ***Producers aiming for intensification***

Developing these archetypes is only the first step for:

- Valorizing **common perspectives** among producers (High diversity and usage of **traditional quinoa varieties**)
- Promoting **inclusive and participatory approaches** (i.e. **games** and scenario workshop and modelling)
- Co-construct collective goverance and organizational tools as **collective trademark and participatory guarantee systems**


# Thanks for your attention

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