

Many Cultivated Species on the Chacra Kichwa, Few on the Table

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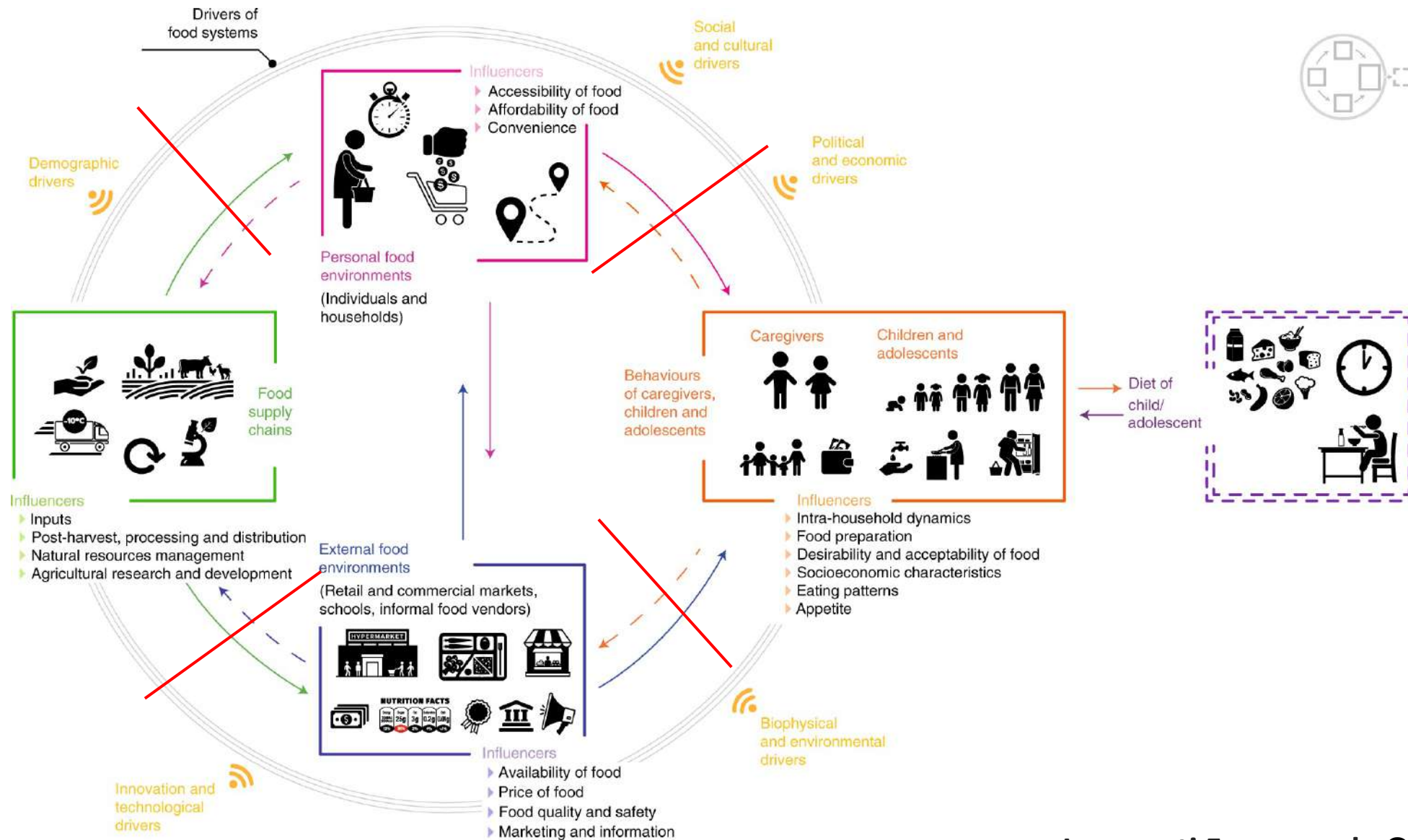
Universidad Regional Amazónica Ikiam

Grupo de Investigación Ecosistemas Tropicales y Cambio Global

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Food Systems: Drivers to Have a Good Diet



Food transitions

- LMICs mainly consumes carbohydrates – 60% (Willett et al. 2019)
- No greens in the forest? Note on the limited consumption of greens in the Amazon (Katz et al. 2012)
- People dependence on food imports, excessive energy intake and shortage on micronutrients (Biesbroek et al. 2023)



Health Challenge in the Amazon: Addressing Malnourishment

Stunting – 23 % children between under 5 years old

Overweight – 35% children between 5 and 11 years old (INEC, 2018)

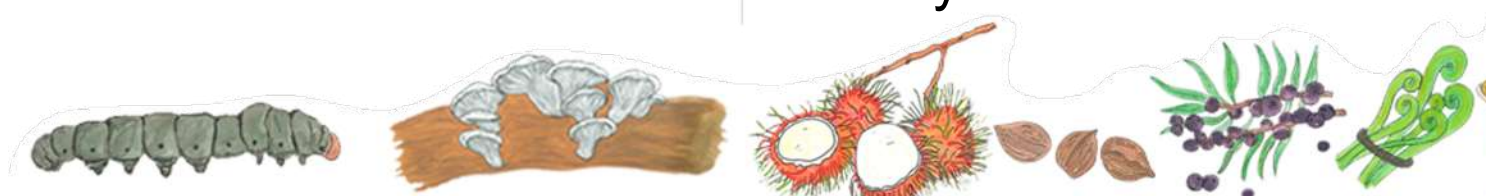
Tena same % (unpublished study)



Chakra kichwa



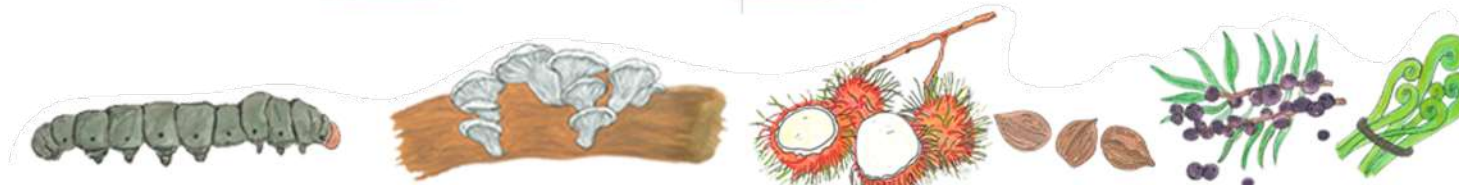
The **chakra** is a subsistence space where numerous species destined for food and other uses such as construction, medicinal, commerce, ornamental, among others, are planted. It allows for the **conservation** of traditional seeds, **Conservation** of traditions, rituals, and **Conservation** of Indigenous identity.



Chakra – Lifestyle

“Napo Runa **production** is focused upon **garden agriculture**, hunting, and gathering. People personify labour and link it to their corporeal experience of ‘**working**’ together in producing the things and stuff of life. [...] The forest (sacha) is masculine while **gardens (chagra) are mainly feminine**” (Uzendoski, 2004).

Cultural practices shape the selection of plant parts for use, the methods of preparation, and the customs around sharing food and mealtime.



Agrobiodiversity in the Chacra: A Cultural Symbol of Prestige



(Perrault 2005, Uzendoski, 2010)



Agrobiodiversity and Food diversity

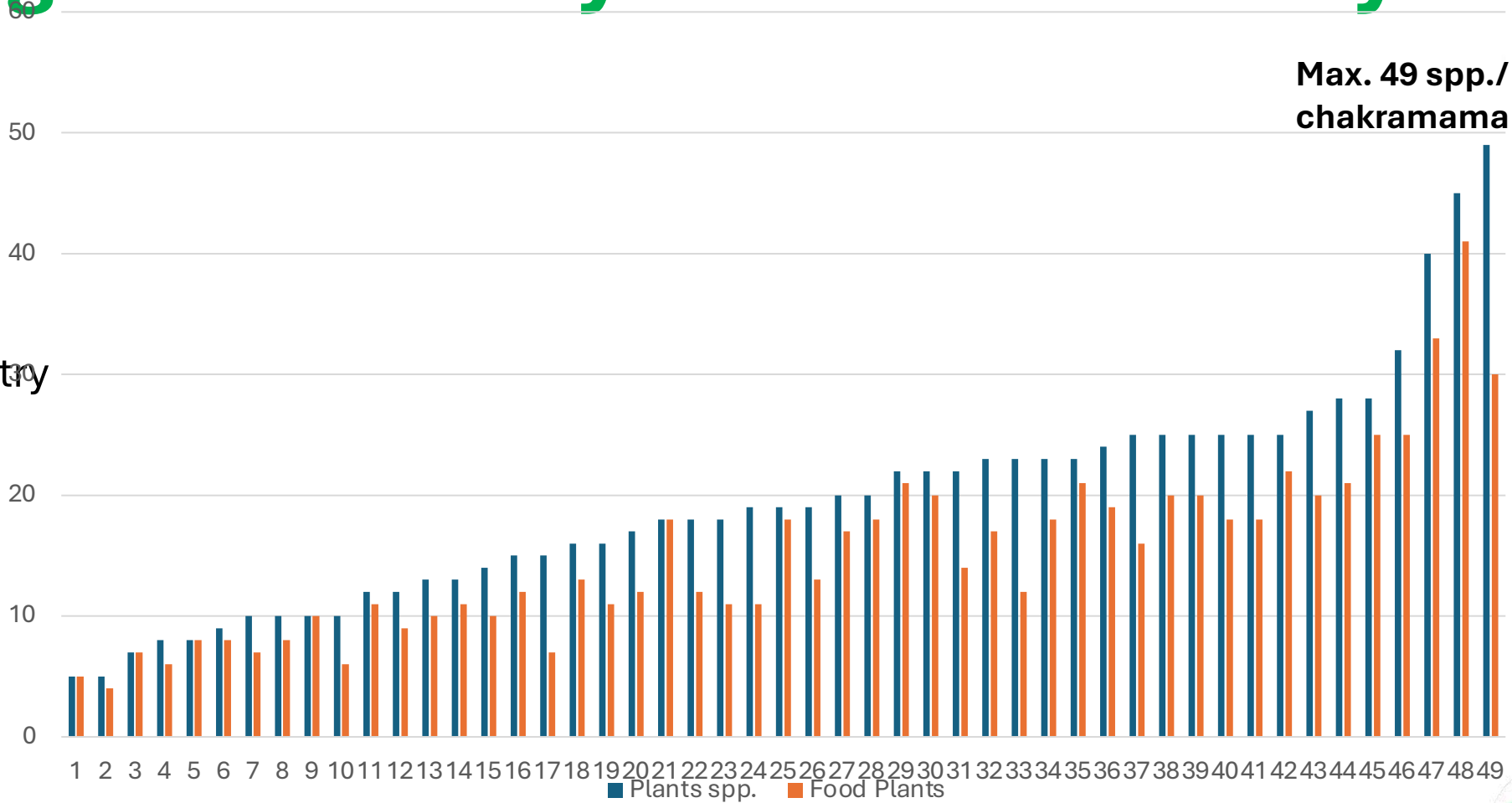


Agrobiodiversity and Food diversity

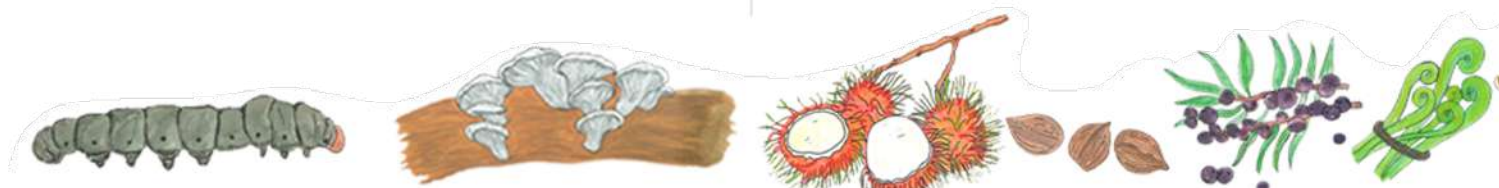
108 species registered in the Chacra Agroforestry System

Min. 5 spp./chakramama

Max. 49 spp./chakramama



In progress, Luzuriaga, Dessen & Zurita



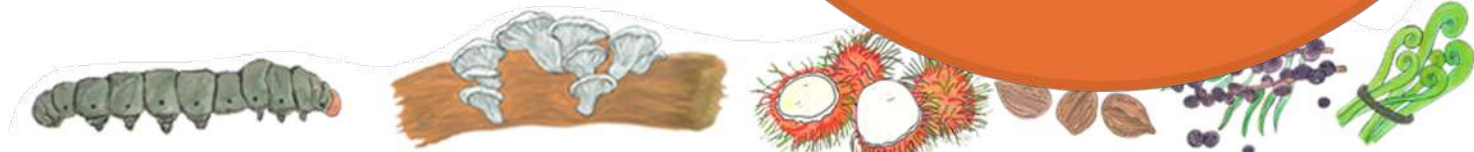
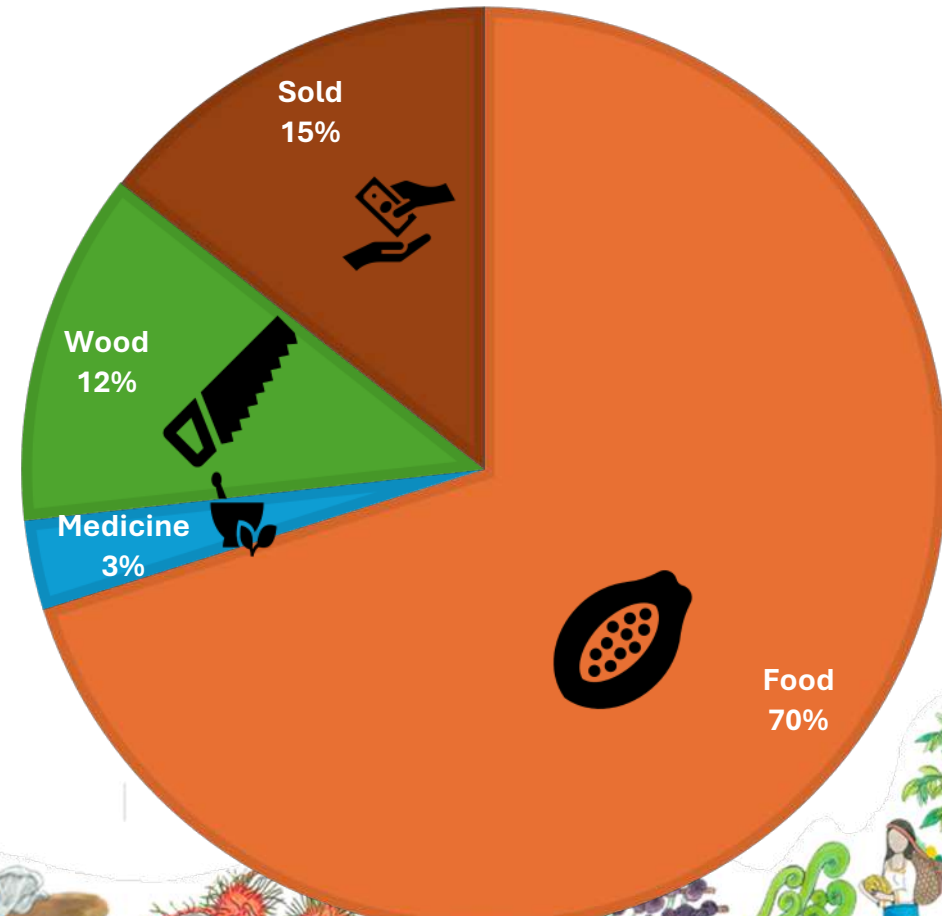
Agrobiodiversity of the chakra

- Every plant holds numerous potential uses, and agricultural knowledge may vary among practitioners.
 - Considering the primary utilization specified by the agriculturalist



USES OF PLANTS

Food Medicine Wood Sold



When Food is Missing on the Table, Agrobiodiversity Existence is Threatened



Highlighting Food Diversity at Public Events and Tourism Hubs





Exploring Household Uses of Agrobiodiversity

- 7 days food diaries
- 161 households

What are People Eating at Home?

Urbano

Plato fuerte	Cantidad	Frecuencias
Arroz (Oryza Sativa) Con: Tilapia, huevo, pollo, carne de res, atún, tallarín, lenteja, carne de chancho.	8	25
Caldo, Sopa, Mazamorra, Crema	8	11
Plátano (Musa Sp.) Preparado: Tacacho, Frito Con: Pollo, Huevo, Queso	3	7
Yuca (Manihot Esculenta) Preparada: Pollo, Tilapia, Huevo, Patas De Pollo	3	7
Pollo (Empanada, Tacacho, Frito, Tamal)	4	6
Huevo Con: Acelga, Pan, Papas.	3	5
Maito	3	3
Pan Con: Cocoa, Café	1	2
Carne (Tallarín, Estofado)	2	2
Tallarín con: Queso, Atún	2	2
Pescado Al Jugo	1	1
Armadillo	1	1
Choclo (Cocinado)	1	1
Chonta Kuru	1	1
Fritada	1	1
Morocho	1	1
Salchipapa	1	1
Tilapia Al Jugo	1	1
Total	45	78

Rural

Plato fuerte	Cantidad	Frecuencias
Arroz (Oryza Sativa) Con: atún, carne de res, pollo, chuleta, frejol, huevo, lenteja, macarela, menudencia, pescado, tallarín, tamal	12	28
Plátano (Musa Sp.) Preparado: tacacho, frito, empanada con: huevo, fideo	4	11
Maito	7	10
Caldo, sopa, mazamorra	6	8
Pollo a la parrilla	2	3
Empanada	1	1
Estofado de tilapia	1	1
Fideo con atún	1	1
Menestra de frejol	1	1
Sardina	1	1
Tallarín con carne	1	1
Total	37	66

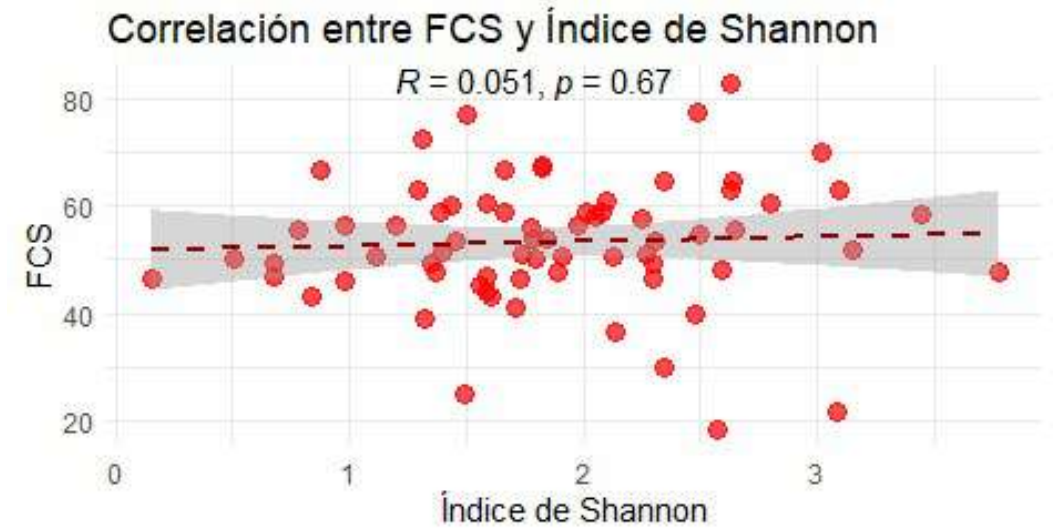


Periurbano

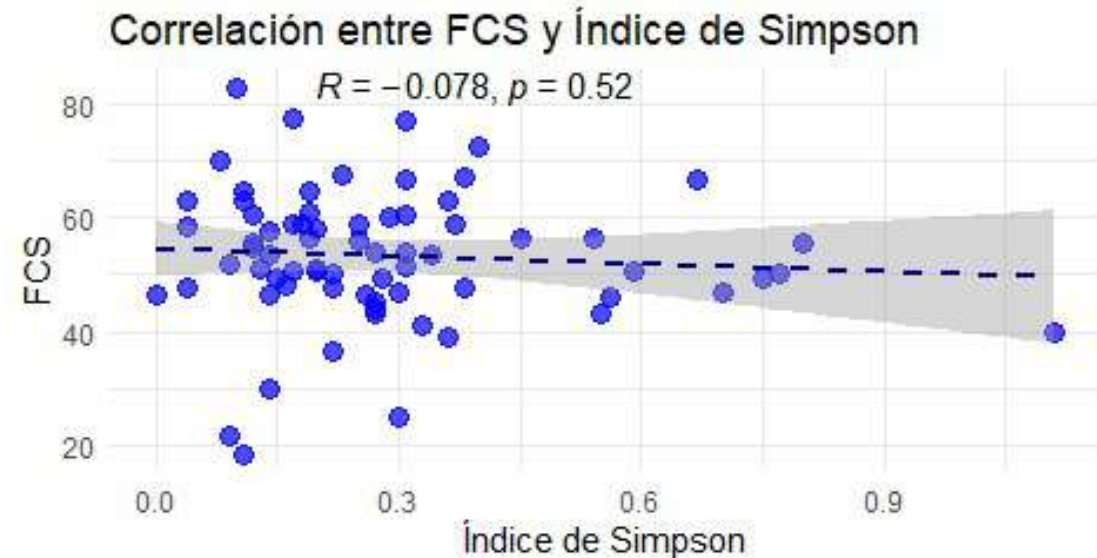
Plato fuerte	Cantidad	Frecuencia
Arroz (Oryza sativa) con: carne, chuleta, guatita, huevo, pescado, lenteja, tilapia, tamal, frejol, pollo	10	36
Caldo, Sopa, Mazamorra	20	31
Maito	7	12
Pollo (estofado, tamal, tallarín, papi pollo)	5	10
Yuca (Manihot esculenta) preparada: carachama, carne de res, sardina, pescado, pollo, sichi, huevos	7	9
Plátano (Musa sp.) Preparado: majado, bolon, frito, chifle, cocinado con: huevo, pollo, carne de guanta	6	8
Huevo con: queso	2	4
Carne (asada, estofado)	2	3
Pescado asado	1	2
Desayuno continental	1	2
Morete y palmito	2	2
Patas muyo	2	2
Sardina (ensalada)	1	1
Bocachico ahumado	1	1
Cevichocho	1	1
Habas con papas	1	1
Laguarichi frito	1	1
Total	70	126

Lack of Correlation Between Agrobiodiversity and Food Diversity

- Some people sold what they cultivated.
 - Moneterian needs: Transports, School
 - People have less available spaces to cultivated
 - Less time to cultivated and gather



FCS – Food Consumption Score

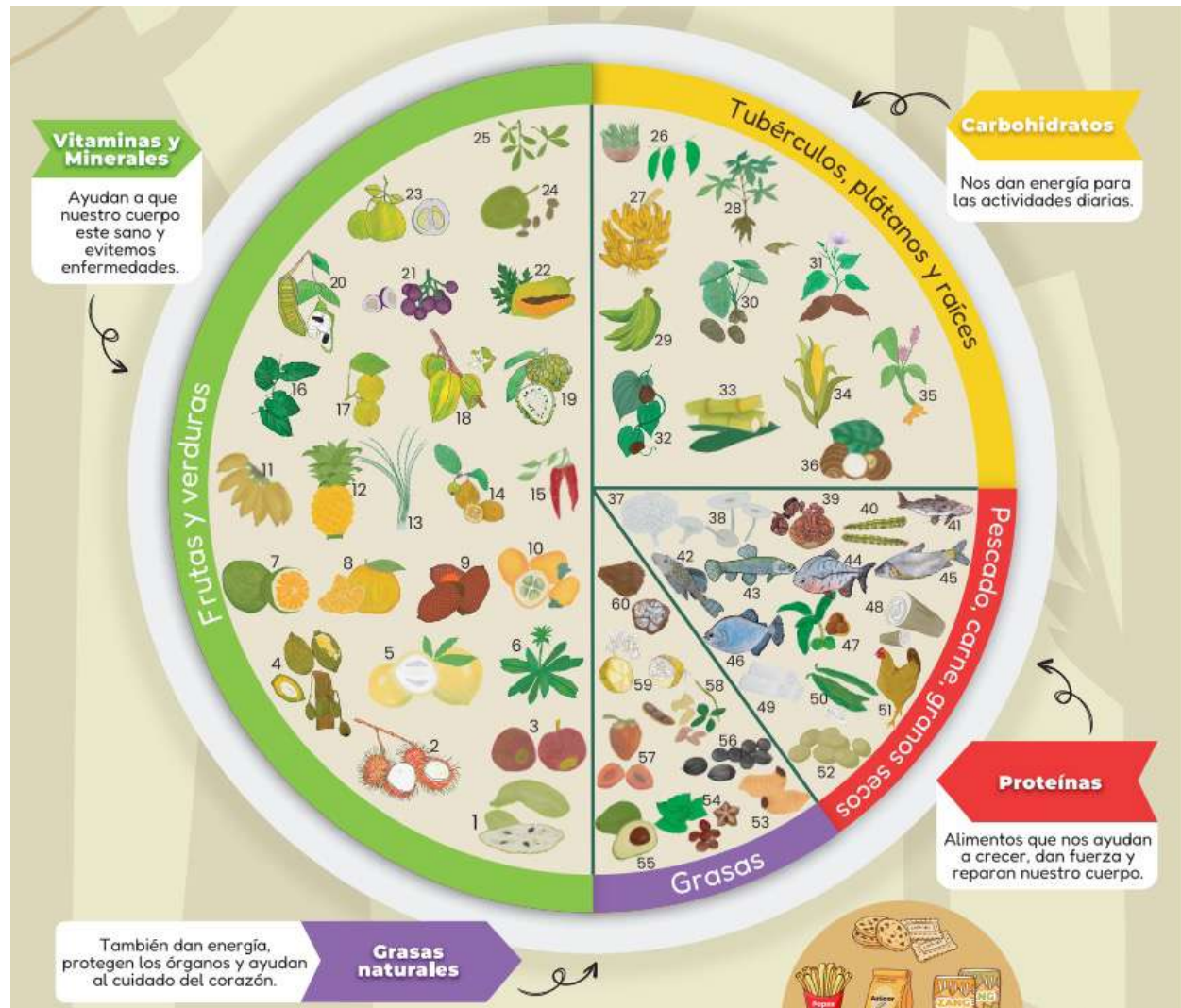


Why Do Households Spend on Food Instead of Consuming Their Own Crops?

- Some individuals sold their cultivated produce.
- Financial needs: transportation and education expenses.
- Reduced availability of land for cultivation.
- Limited time for farming and gathering activities.
- Influence of food commercialization.
- Decline in the perceived value of local foods.



Limited Nutritional Analysis of Underutilized Species



Final Reflections

The chacra is a multifaceted agroforestry system integrating ecological, sociocultural, and productive aspects.

Biodiversity is essential for achieving true food sovereignty.

There is a critical need to connect food production with food consumption.

Shifting perspectives from export-oriented crops to agrobiodiverse agroecosystems can improve livelihoods across economic, social, health, and environmental dimensions.



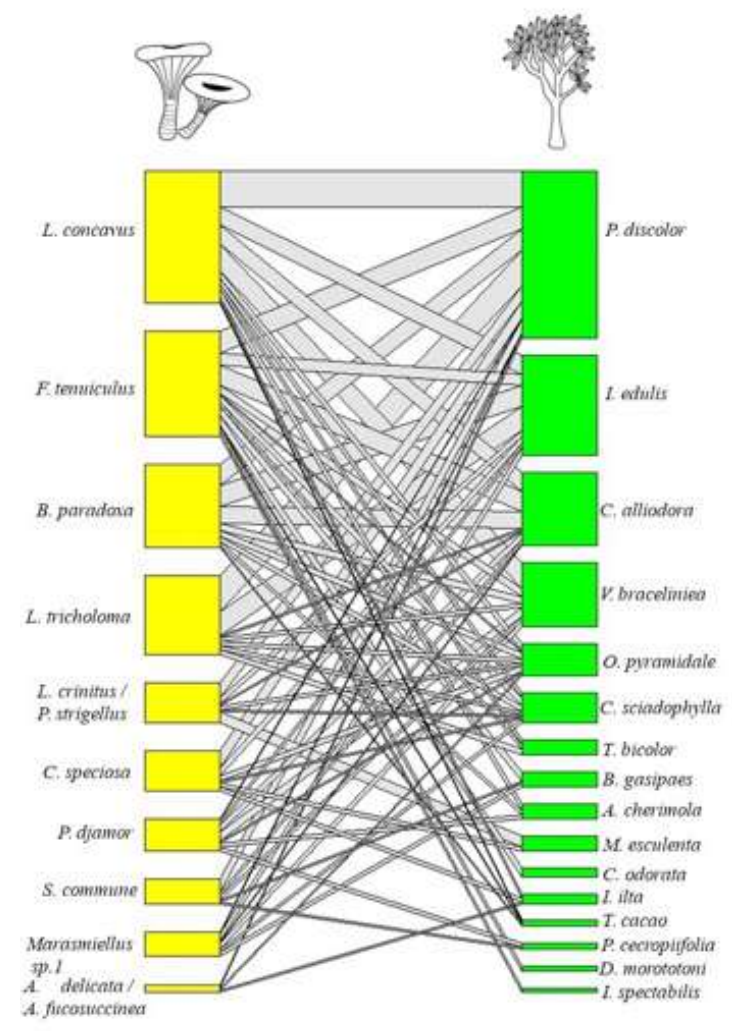
Strengthening the research community including **Jonathan Luzuriaga, Susana Caluña, Juan Francisco Ponce Sánchez, Michelle Guachamin-Rosero, Katia Vicente**, and all those currently committed to working in the Amazon region.

Gratitude to workshop facilitators Fernanda Balladares, Gina Trujillo and Claudia Moros.

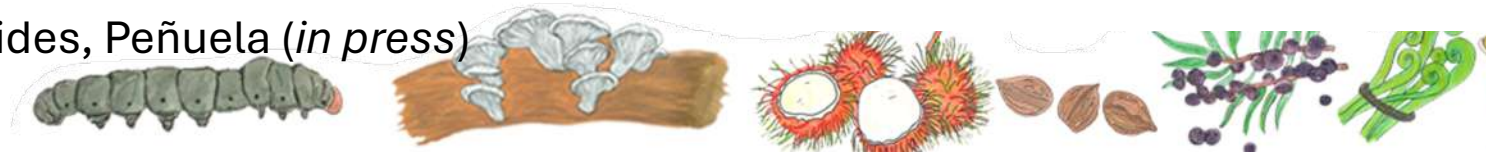
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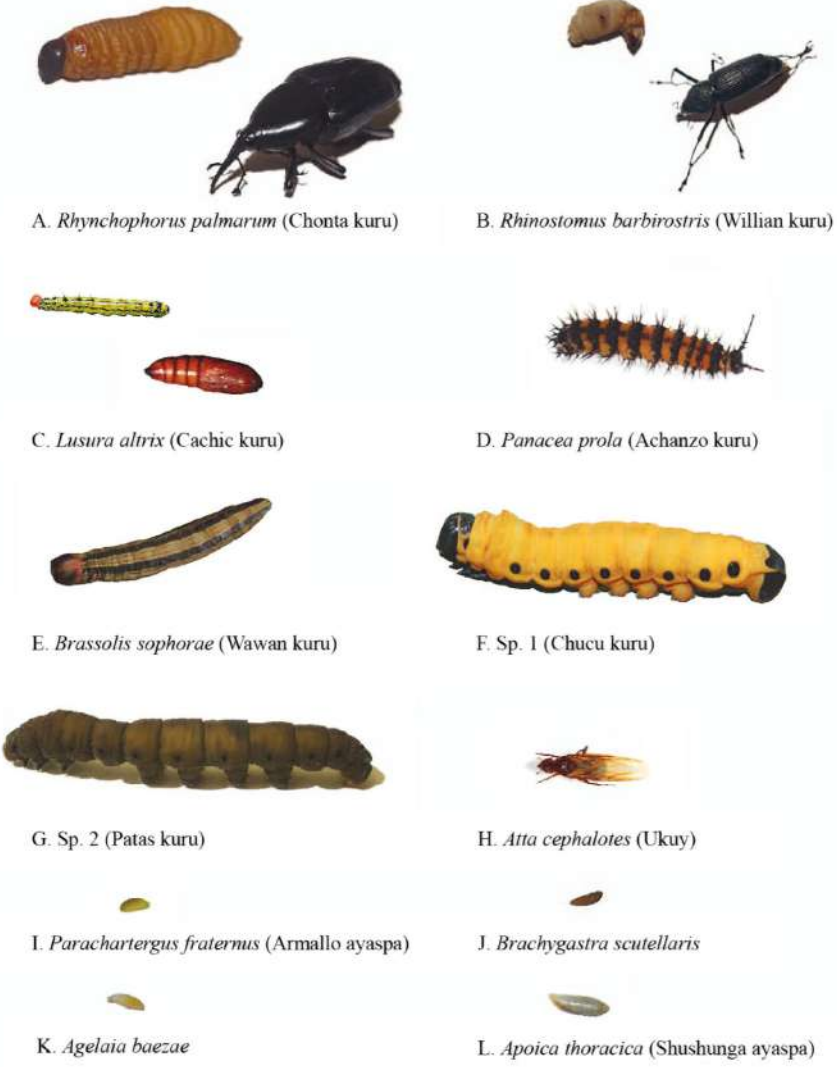
Local edible mushrooms



Vicente, Vasco, Zurita-Benavides, Peñuela (*in press*)



Edible insects in the chakra



0 5 cm





Diversity of ingredients



;;Get your hands dirty!!

Workshops with local food – Mingas culinarias



¡¡Get your hands dirty!!

Workshops with local food – Mingas culinarias



Explore alternative recipes using chakra ingredients: Workshops on producing cassava flour



Bebidas consumidas en los estratos.

Urbano

Bebidas	Cantidad	Frecuencias
Agua de anís, guayusa, hierba luisa, Jamaica	4	17
Café	2	16
Colada de avena, maíz, madura	3	14
Jugo de borojó, guanábana, mora, granadilla	3	6
Chicha	2	6
Batido de frutas	1	1
Total	15	60

Rural

Bebidas	Cantidad	Frecuencias
Agua de hierba luisa, Jamaica, guayusa, Jamaica	4	22
Jugo de piña, Jamaica, limón, naranja, maracuyá, morete	6	21
Colada de avena, maíz, maduro, machica	4	19
Chicha	2	14
Café	1	9
Batido de frutas	1	1
Cola	1	1
Total	13	66

Periurbano

Bebidas	Cantidad	Frecuencias
Colada de avena, maíz, maduro	3	34
Chicha	1	32
Agua de guayusa, canela, hierba luisa, cedrón	4	27
Jugo de limón, manzana, naranja	3	13
Cafe	1	5
Fresco solo	1	3
Coca cola	1	2
Chocolatada	1	1
Total	15	117