

Conference Paper

# Motivations to adopt Agroecology in rural communities of the Northern Andes of Ecuador

## (Motivaciones para adoptar a la Agroecología en comunidades rurales de los Andes Septentrionales del Ecuador)

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### Abstract

Agroecology (AE) is a discipline of study that is consistently expanding in the scientific, sociopolitical, and environmental fields, both globally and regionally in Latin America. This study focuses on understanding the dynamics and diversity of motivations that farmers have when deciding whether to adopt AE or not in the Northern Andes of Ecuador. Using mixed methods, we described the historical evolution of the perceptions of agroecological practitioners and external agents regarding the motivations, incentives, compensations, and expectations they had. This study discusses the nature and dynamics of motivations using sustainability as a transversal axis to assess responses. We worked with a proportionally similar number of indigenous and mestizo farmers who declared to have an interest in the study and had access to a piece of land for agroecological production. This study reveals convergences and divergences of perceptions among stakeholders about the different strategies used by external agencies to address AE and rural extension. The types and levels of participation throughout the historical evolution of AE showed low participation of farmers in the early stages, associated with planning; however, there was a steady increase in farmer participation in the stages associated with hands-on activities. In general, there is very little motivation for agroecological food production among youth and men, whereas younger rural men and women feel more motivated to work on agribusiness export projects such as the cut-flower industry.

**Keywords:** *incentives, compensations, sustainable agriculture, behavioral drivers, stakeholder motivations, environmental perception.*

### Resumen

La agroecología es una disciplina que se encuentra en constante expansión en el ámbito científico, sociopolítico y ambiental, tanto a nivel mundial como regional en América Latina. Este estudio se centra en comprender la dinámica y diversidad de motivaciones que tienen los agricultores a la hora de decidir adoptar o no la agroecología (AE) en los Andes del Norte de Ecuador. Utilizando métodos mixtos, describimos la evolución histórica de las percepciones de los agricultores y de los agentes externos sobre las motivaciones, incentivos, compensaciones y expectativas que tenían. Este estudio analiza la naturaleza y la dinámica de las motivaciones utilizando la sostenibilidad como eje transversal para evaluar las respuestas. Se trabajó con un número proporcionalmente similar de agricultores indígenas y mestizos,

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quienes declararon tener interés en el presente estudio y que tenían acceso a un pedazo de tierra para la producción agroecológica. Este estudio revela convergencias y divergencias de percepciones entre los actores involucrados acerca de las diferentes estrategias utilizadas por los organismos externos para abordar la AE y la extensión rural. Los tipos y niveles de participación a lo largo de la evolución histórica de la AE mostraron una baja participación de los agricultores en las primeras etapas, asociadas a la planificación; sin embargo, se produjo un aumento constante de la participación de los agricultores en las etapas asociadas a actividades más bien prácticas. También se observó que los agricultores son de edad y en su mayoría son mujeres. En general, hay muy poca motivación para la producción de alimentos en los jóvenes y los hombres, puesto que los hombres rurales jóvenes y también las mujeres se sienten más motivados para trabajar en proyectos agroindustriales de exportación, como en la industria de las flores de corte.

**Palabras Clave:** *incentivos, compensaciones, agricultura sostenible, impulsores del comportamiento, motivaciones en actores clave, percepción ambiental.*

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## 1. Introduction

The unsustainability of current food systems, due to the effects of the agenda of conventional agriculture has clearly impacted both farmers and consumers at a global, regional, and local scale (1). The top-down imposition of outside knowledge that comes with the conventional approach of agricultural extension obscures the agency of local small-scale farmers in the dynamics of knowledge (2). Agroecology (AE) is emerging as a response to the social, economic, and environmental imbalances created by an agricultural production systems with a high dependence of external inputs and uneven distribution of income (3). AE offers a complex and transdisciplinary approach to tackling unsustainability in food systems that brings about a high participation of stakeholders (4,5), and merges the local and traditional production of knowledge with contributions from formal academic research, in order to improve the performance of food systems while engaging people in tangible actions (6).

One of the drivers for the rise of AE in Latin America was the need to challenge industrial agribusiness inspired on the principles of the Green Revolution and searching for food security and food sovereignty with a combination of both innovative and ancestral practices. These motivations were initially supported by non-government-organizations (NGOs) and the citizens, which included practices that were adaptive and contextual with the social dynamics (4). Another historical motivation was the search for alternatives to the excessive use of pesticides, especially in areas devoted to industrial farming (7,8). The perceptions of the different connotations of AE have not been deeply explored, and they are sometimes assumed to be homogeneous; however, AE is understood differently by every stakeholder, and even by academics



(9). Hence, the motivations to adopt its practices are also diverse and require research in the Andean Region (10–12)

## 1.1. Trajectory of Agroecology in Ecuador

An early concept of AE started to form in Ecuador at the end of the 1980s around the terms “organic” or “biologic” used to describe pesticide-free produce. Over time, the word “organic” stopped being considered a synonym of “agroecology” because it did not communicate all its dimensions as we know it today: i) ecological, ii) economic, iii) social, iv) cultural, v) political and vi) ethical dimensions ((13). Current definitions of AE take into account at least three views: a scientific discipline, an agricultural practice, and a social movement (14,5,15). Regarding the development of agriculture during the second half of the twentieth century, the position of the Latin American countries, and the Ecuadorian government agencies, was focused on formal institutional research and conventional agricultural expansion, excluding small-scale farmers from any significant participation (16,17). Peasants were not really counted as political subjects (18,19), and public policy followed a straightforward agenda that favored the historical power holders (17). In that context, the growers who embraced and adopted the conventionally accepted technology, which highlighted the use of high external inputs, were called “progressive farmers” (*agricultores progresistas*), in contrast to the traditional farmers who, for the most part, struggled for subsistence and were unable to afford modern technology, especially in the more remote areas of Ecuador.

Even though formal research institutions are now trying to comply with the mandate of the Ecuadorian Constitution of 2008 to “guarantee a sustainable model of development that is environmentally balanced and respectful to cultural diversity, while preserving biodiversity and the capacity of ecosystems for natural regeneration” stated on Article 395 (20), current publications evidence that they still struggle to do agroecological research taking into account all the relevant stakeholders along the food systems (21).

The contribution of NGOs (non-government organizations) to include farmers from rural areas in the discussion was probably a hint of what has become, at this point in time, a stronger agroecological movement represented mostly by associations of agroecological practitioners (1,22,23). These organizations provided a strong platform for the development of indigenous and peasant social movements that had a visible effect during the indigenous uprisings of the 1990s (19) and later (24). The NGOs helped build content and shaped the discourse of the indigenous organizations, which was positively capitalized by the indigenous leadership (3). Chiriboga (2014) asserts that



one of the important achievements of the NGOs in Ecuador was the strengthening of organizational capacity and leadership in rural areas.

In the last decade, the central, provincial, and local governments, mainly because of pressure from the peasant organizations and in response to the mandate of the Constitution of 2008, started to implement agroecological initiatives through timid public policy and positive actions to motivate adoption of AE (20,25). Grassroots organizations and farmer associations have actively advocated for AE and have contributed to the creation of a favorable context for its expansion; however there is a lack of consistent participation from the consumers, with rare exceptions (23) and with strong opposition of the central government (24).

## 1.2. Understanding stakeholder motivations

Effective strategies to expand AE in the Andean Region would benefit from social, economic, environmental, cultural, and political advantages, and would contribute with their enormous potential to the establishment of ethical principles that would help build global resilience beyond the agricultural fields (26,27). Agroecological science needs to keep on growing together with the social movements to prevent losing its transformative potential and getting coopted by hegemonic conventional agribusiness (28) or other political interests. There is a need to find ways to enhance the adoption of AE at every level of society, involving rural and urban citizens, and all stakeholders, including public policy makers, institutions, academia, and organizations of farmers and consumers, applying the principles of AE to general practices in order to sustainably manage soil, water, and biodiversity (27). Genuine adoption of AE guarantees longer permanence of practices (29), but it requires some conditions: understanding and reflecting about barriers and enabling factors, social and political contexts (30), cognitive factors (31), intrinsic and extrinsic motivations (32), incentives and rewards (33,34).

Ryan & Deci (2000) assert that extrinsic human motivation is a continuum that may eventually end up with a complete integration of values. They describe a motivation system of six levels starting with a stage of amotivation, followed by external regulation, introjection, identification, integration, and finally, the last stage called intrinsic motivation. Scarborough & Méndez (2015) firmly assert that it is well established that a new technology works better when accompanied by communication strategies that raise awareness about its benefits and a long-term intervention to achieve an authentic change of behavior. However a case study from the Netherlands suggest that the internalization of policies by farmers requires an understanding of the specific motivations



that operate in their attitudes (36). This former affirmation highlights the relevance of our research.

The literature, to some extent suggests that farmers find in AE an alternative to tackle environmental degradation through historical motivations. A case study in Tabasco – México maintains that farmers respond to ecological and social dynamics through enhancing the process of adopting agroecological practices that make sense to them (28). The authors state that agroecological practices are “natural” to local farmers since they do not work against natural processes but with them instead.

The intersection between motivations, rational dimensions and other factors such as (i) levels of interaction with nature, (ii) origin of the practitioners and (iii) the length of time implementing agroecological practices were described in a study with smallholders in southern Brazil (37). That study reported motivations are associated with the interest on recovering ancestral practices, health concerns and market opportunities for pesticide-free produce. A case study in Cameroon shows that older farmers are more prone to adopting conventional farming techniques due to their inability to adapt to newer options, while younger farmers are more open to adopt AE in association with the following factors: higher level of income and years of education, and families with more of their members working in the farm (38). A case study in Chile (10) describes motivations as being intrinsic or innate and extrinsic, arguing that the intrinsic ones do not require a reward and are more related to visions of autonomy, whereas extrinsic motivations require either a reward or avoiding a punishment.

With respect to compensations, a case study in Brazil explored the drivers for pro-active member participation in an agriculture cooperative and found that obtaining personal or political benefits is perceived as a compensation; they also found that economic incentives are drivers for participation in the general assembly but not for engaging in boards and decision-making committees. Nevertheless, the main drivers for participation as pro-active members were the duration of membership and a strong ideological motivation. Hence pro-active participation is more associated with solidarity and altruism than with the search for private benefits (39).

Recent research shows the basic conditions for achieving the adoption of agroecological practices. Schoonhoven & Runhaar (2018), based on a study with almond farmers in Andalusia, claim that motivation is one of four potential factors for adopting AE. These factors are both intrinsic and extrinsic. In this fashion, motivation and the ability to adopt are considered intrinsic factors, whereas demand and legitimation of AE are considered extrinsic factors. In the cited study, motivation is defined as the “extent to which farmers are willing and motivated to participate in agroecological practices” (p. 447). Additionally, Pinzón (2017), frames it in terms of (i) motivation as a rational election,



which requires both economic and social incentives and (ii) ideological motivations, which drive farmers to articulate themselves into collective actions. Additionally, the author states that the transition to AE implies diachronic variables, hence we have established different moments or phases of the evolution of AE in our area of study.

In this research, we used a case study in the Northern Andes of Ecuador to explore the motivations that farmers may need to change their production methods to the ones proposed by AE. This research undertakes: (i) a description of the type and level of participation of the stakeholders along the different stages of implementation of Agroecology in the study area, (ii) analysis of the historical and current motivations that farmers and external agencies (government and non-government organizations) perceived as important for adopting AE, and the possible compensation they may have received along this process, and (iii) perceptions about the expectations of AE from the perspective of the farmers and the agencies. The findings of this research will inform relevant stakeholders about the best strategies for engaging farmers in the process of adoption of AE.

## 2. Methods

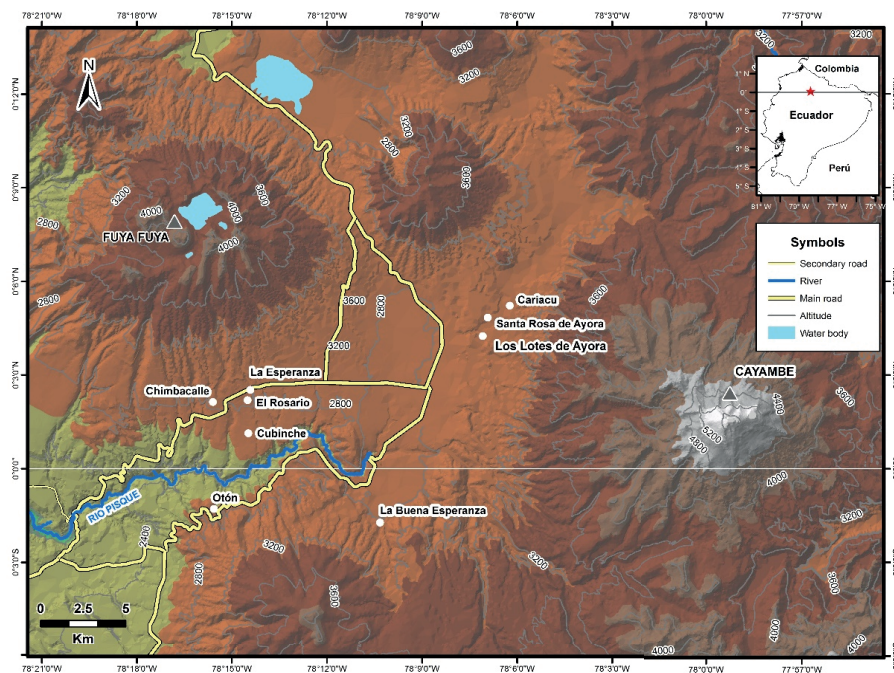
### 2.1. Conceptual background and definitions

For this study we are considering *motivation* as something that moves someone to do something, it is not static, thus it varies with regards to its nature, amount, and focus (32). We apply the framework of the Self-Determination Theory (SDT) for human motivations (40). This theory differentiates between autonomous or truly volitional actions (intrinsic or autonomous motivations) and heteronomous actions that are controlled by forces experienced as external to the self (extrinsic or controlled motivations). Not all motivations are intrinsic in the lives of farmers and people, though. In fact, a large number of tasks are done because of their practical value with different degrees of autonomy, including nuances going from a feeling of choice on one hand to a feeling of compliance with an external control on the other hand (32). To become motivated to adopt AE, then, the subjects need to internalize and integrate the values inherent to the activities without a sense of obligation or passive compliance and perceive them as an active personal (or collective) commitment. A *compensation* is defined as repayment for possible losses or risks taken during the process of adoption of AE practices. It is relevant to include the concept of incentive because some responders may regard it as something that incites their determination or action when asked about compensation. *Expectation* is defined as a reasonable vision of what AE will deliver in the future.



## 2.2. The case study

We selected a geographical area where AE has been consistently evolving from the early 1990s to the present. The area of the study consists of several communities located in two counties at approximately 100 km north of Quito, the capital of Ecuador, at both sides of the equator (Figure 1). The communities of La Esperanza, Cubinche, El Rosario and Chimbacalle are part of the county of Pedro Moncayo (2889 masl.; average temperature 13°C; annual rainfall 832 mm) whereas the communities of Santa Rosa de Ayora, La Buena Esperanza, Otón, Cariacu, and Lotes de Ayora are part of Cayambe county (2809 masl.; average temperature 13.5°; annual rainfall 873 mm; MAE, 2012). This territory has a long and intensive agricultural history characterized by Andean crops such as corn, tubers, cereals, vegetables, some fruit trees and, in recent decades, a buoyant cut-flower industry that has been implemented extensively (42). A large proportion of the population of Cayambe and Pedro Moncayo is indigenous with a long tradition of Spanish colonization and hacienda oppression (Rubio, 2012; Aspiazu, 2017), which probably limited the flow of ancestral knowledge to the present. However, the literature refers to this area as a rich quarry of agricultural knowledge and agrodiversity (44).



**Figura 1**

*Map of the study area in the Pichincha province, Ecuador.*



### 2.3. The participants

This study focused on two types of participants: (i) 19 small-scale farmers who claimed to be agroecological practitioners, belonged to local organizations and showed proof of complying with agroecological production principles; (ii) eight members of governmental and non-governmental agencies working on AE in the area of the study. It is worth noting that the affiliations of the members of agencies are dynamic, since all of them have transitioned from different levels of government and have a diverse relationship with NGOs, and some are or have been farmers, which instead of producing noise in the data, we consider they contributed positively with different voices and positions in their responses.

The participants responded to an open invitation sent to their farmers' associations asking to participate in the study, provided that they complied with the following characteristics: being an active member of an agroecological organization operating in the area of the study, being an agroecological practitioner with access to a piece of land for this type of production, marketing their produce through an alternative way such as farmers' market, weekly boxes, direct delivery to clients, or through a store recognized as agroecological by any participatory guarantee system, also called PGS (45,46). For agency members, the invitation was sent to those who were members of a local or provincial government agency or non-government organization (NGO) operating in the area of the study since the early 1990s in matters related to AE. Agency members typically started their work associated with NGOs, however, their role transitioned through government agencies, farmers' associations, other organizations, and agroecological producers. We defined agroecological organizations as those who claim to comply with agroecological principles, either with a PGS (46,47) or with any other internal system.

### 2.4. Interviews

A structured interview was applied to participating farmers at their community venues. For agency members, the interview was performed at their office or at a public space. The questions were the following:

1. What were the motivations for you to adopt agroecology at the beginning of the process in your community? Free listing
2. What are the current motivations for you to persist with the practice of agroecology? free listing. Free listing





3. Did you receive any compensation for adopting agroecology in the past? From whom?
4. Do you receive any compensation currently for persisting with the practice of agroecology? From whom?
5. What is your expectation about agroecology in the future? Free listing
6. What has been your participation like in the following moments of the agroecological process in your community? Options: passive, active, intermediate, during: diagnostics, planning, design, implementation, monitoring, evaluation, making decisions. (This question, for farmers and for government and non-government organizations.)
7. What were and what are the motivations for your organization to embrace agroecological initiatives in your organization's agenda? (This question, only for members of government and non-government organizations.)

Data collection with farmers was carried out between October and December 2018; data collection with agencies was carried out between November 2018 and September 2019. Mixed methods were applied for data collection and analysis. A structured interview was applied to both farmers and agencies members with the same set of questions except for an additional question for agency members related to the agency where they worked in the past and/or in the present. We used a free listing tool (48) for enquiring about past and current motivations and compensations for adopting AE (questions 1, 2, 3, 4), and their future expectations (5). In the second section of the interview we asked about the type and level of participation of farmers and agencies along the evolution of AE in the area of the study (6). Lastly, the agency members were asked about the motivations their agencies had for including AE in their agendas in the past and in the present (7). The survey was linked to open ended questions allowing the collection of rich narratives depicting the perception of the roles of stakeholders along the transition towards the establishment of AE. The methods of this research had the authorization of the Office of Institutional Review Board (OIRB) from the University of New Mexico in June 2018. In addition, all participants signed individual informed consent forms in Spanish, as all participants were native Spanish speakers.

## 2.5. Analysis

We used a Composite Saliency Value analysis as described by Puri (2011) to detect the most salient motivations among farmers extracted from the free listing proposed to



the participants for question one and two. For questions three, four, five, six and seven (question seven for agencies only) about compensations and expectations, responses were depicted as histograms and summarized in tables. The intention of this section is to find convergences and divergences in perceptions about compensations and expectations between farmers and agency members. For question 6, tables and histograms depict the view of farmers and agency members regarding the levels of participation in seven different moments of the development of AE in the area of the study.

### 3. Results and discussion

Forty-five respondents to the invitation met for discussing the relevance of the research questions, although not all of them participated later as interviewees, mostly due to difficulties in contacting them. From this first encounter, nineteen farmers were contacted and interviewed. A brief description of the participants is included in Table I. This study describes a considerably aged population of farmers with very little presence of young people, in contrast with the younger workers found in the cut-flower industry next door to the farms of our participants. Out of the average 36.8 years of agricultural work, 19.6 years were devoted to AE, which illustrates the length of time that NGOs have been present in the area working in agroecological initiatives with our participants. From their narratives some farmers recognize that they had been implementing AE in their lands long before the NGOs arrived. The small size of their fields (1 ha) questions the way AE is expected to provide enough food for households with an average of 4.1 members. According to a former member of an NGO working in Pedro Moncayo county, the large proportion of female participants is due to an existing mandate from funders to engage women (gender approach) in their proposals, but also to the fact that men are engaged in other activities for income purposes. The majority of farmers have only attended primary school and identify themselves as indigenous and mestizos in a balanced proportion. Most of farmers have access to irrigation, and eleven interviewees got the vast majority of their income from agriculture (51% to 100% of income). Both Cayambe and Pedro Moncayo counties show high poverty rates (Unsatisfied Basic Needs index: Cayambe county 66.9 %; Pedro Moncayo at 71.9 %; SICES, 2010), even though the development of the for-export agroindustry and associated commercial activities has been consistent for at least three decades.

The Figure 2 displays a diachronic progression of events in the development of AE in the area of the study, where farmers and agencies show different levels of participation. From the farmers' perspective, their level of participation at the early phases of the development of AE projects was mostly passive (n= 19, frequencies: diagnostics 0.53;

**Tabla 1**

*Demographic description of participants for this study (n = 19). Abbreviation: Participatory Guarantee System (PGS).*

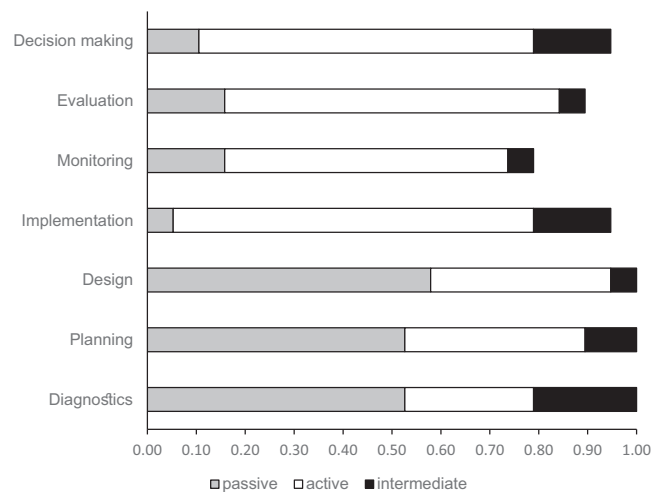
| Variable  |                            | mean $\pm$ SD %   |
|---|----------------------------|-------------------|
| Age   |                            | 54.63 $\pm$ 7.5   |
| Years doing agriculture                                       |                            | 36.79 $\pm$ 17.72 |
| Years doing agroecology                                       |                            | 19.63 $\pm$ 20.19 |
| Land area (hectares)  |                            | 1.03 $\pm$ 0.9    |
| Number of household members depending on participant's income |                            | 4.11 $\pm$ 1.49   |
| Gender  | Male                       | 21.05 %           |
|   | Female                     | 78.95 %           |
| Ethnicity   | Indigenous                 | 47.37 %           |
|   | Mestizos                   | 52.63 %           |
| Schooling   | Primary                    | 84.21 %           |
|   | High School                | 15.79 %           |
| Irrigation:   | Yes                        | 89.47 %           |
|   | No                         | 10.53 %           |
| Proportion of income coming from agriculture:                 | Up to 25%                  | 10.53 %           |
|   | Up to 50%                  | 31.58 %           |
|   | Up to 75%                  | 15.79 %           |
|   | 100%                       | 42.11 %           |
| Role at organization  | Community leader           | 47.37 %           |
|   | None                       | 26.32 %           |
|   | AE promoter PGS AE auditor | 15.79 %           |
|   | Other                      | 10.53 %           |

planning 0.53; design 0.58). Meanwhile, later phases of the development show a more active participation of farmers (implementation 0.74; monitoring 0.58, evaluation 0.68; and decision-making 0.68). But there was a much higher perception of participation in the implementation stage, where agroecological practices were undertaken in the field. From the farmers' perspective, it was the agencies who drove the process through diagnosis, planning and design, whereas, the patterns change at the stage of implementation when the narratives describe a higher level of participation especially when working on the farmers' fields.

The farmers commented about their contribution with actions that helped build a bridge between the NGOs and the farmers. One 65-year-old farmer from la Esperanza reported that he was an intermediary between an NGO and the community members during the early stages, and that he was asked by the NGO to organize the community so farmers could have access to benefits from the NGO. A report from FAO describes



the positive contribution of NGOs' interactions with farmers in terms of participation and strengthening of farmers organizations to resolve perceived needs (50). However, in our case study, there is no clear evidence that farmers perceive themselves as being active in the diagnostics, planning and design of AE in their communities.



**Figura 2**

*Level and type of participation of farmers (n = 19) at seven stages of development of Agroecology as described by themselves.*

In the later stages of the development of AE, namely implementation, monitoring, evaluation and decision-making, the perception of active participation of farmers increased. Narratives from farmers tell about positive changes in their fields and in their lives. There is evidence that farmers currently reflect over their own achievements. That is the case of a 49-year-old woman from Ayora, who claimed that she was challenged to become an AE promoter before she even felt ready, but she accepted the challenge and succeeded. A 52-year-old woman from Ayora affirmed that at the beginning, it was the technicians who made decisions, but at the end of the process, it was her and her family who were making their own decisions about their farm management. This affirmation is consistent with Vía Campesina's claims about AE leading farmers to make autonomous decisions about their fields (2011). Another older woman from Cuniburo said that when her farm achieved a good level of development, she had many visitors and she was proud to communicate her success to inspire other farmers. Similar anecdotes from farmers have been also reported in Central America as an effect of the role of the *promotor campesino* stimulating other farmers to engage in agroecological practices (52).

On the other hand, Agencies perceived themselves as being active in almost all phases of the transition to AE, claiming that their role was active in the planning,



and four out of eight during the design phase. When the agencies were asked about their perception of farmers' participation, they stated that the farmers were active in the planning (six out of eight), implementation (four out of eight), and decision-making phases (four out of eight). Self-perception of agencies' participation is reported as high, and so is agencies' perception of farmers' participation in the planning stage, which shows that agencies perceive that the planning stage was a collaborative task with farmers. As Figure 2 shows, however, there is a divergence in perception between agencies and farmers about the farmers' participation in the planning stage. Agencies claimed that farmers "contributed with a piece of land for building a communal reservoir" and that "farmers also worked together with technicians from NGOs", probably referring to physical hands-on work, but there is no report of an intellectual participation at this stage.

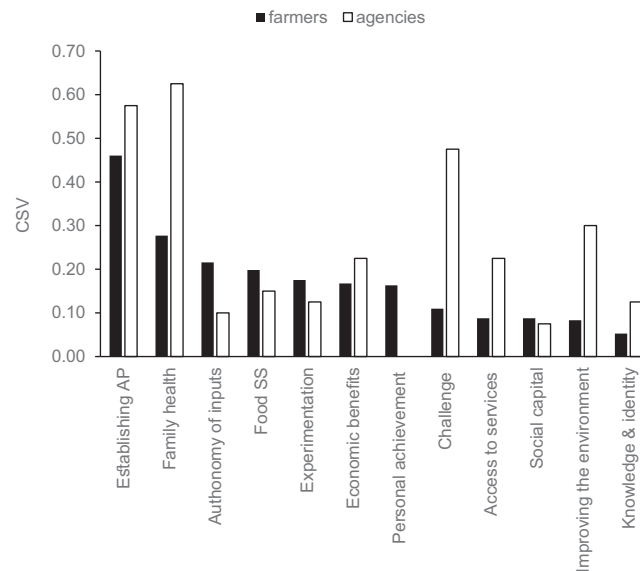
Our findings suggest that the level of involvement of potential beneficiaries of agroecological projects differ along their different stages. In the light of literature, participation is power (53); thus, it is possible that the progression of farmers' participation, in this case, could be read as a dynamic of increasing empowerment of farmers. Case studies from Pakistan, Colombia, and Turkey illustrate the process of empowerment of communities, including an update of Arnstein's ladder of participation (53), which is more applicable to countries like those in the cited study and, probably more suitable for Ecuador (54). Narratives from an NGO member confirm that in early stages of AE, farmers expected the assistance from outside agents; at that time, the NGOs contributed with diagnostic tools to produce a baseline of the individuals and their organizations, the state of conservation and access to resources, and land ownership; the NGO member states that they mapped the social-economic situation of the families, the communities and the territory, and the state of the landscape. Peasant leaders became the bridge that connected the farmers with the NGOs and the farmers were interviewed for the purpose of producing a baseline. For the planning stage, the NGOs made decisions according to the ability that families showed at implementing improvements that were both quick and visible, so that those successful improvements could become the motivation for other farmers. Agency members agree that this strategy is an insight they gained from farmer to farmer (*de campesino a campesino*) methods (27,55).

### 3.1. Motivations of farmers for adopting agroecology

The most important motivations for farmers to adopt AE at the beginning of the process was: establishing agroecological practices (CSV = 0.46), well ahead of concerns about family health (CSV = 0.28), autonomy of inputs (CSV = 0.22), food security



and sovereignty (CSV = 0.20), experimentation, observation and training (CSV = 0.17), obtaining economic benefits (CSV = 0.17), and obtaining personal achievement (CSV = 0.16). There were further motivations with lesser values (Figure 3).



**Figura 3**

*Motivations for farmers (n = 19) to adopt Agroecology in the past.*

From the farmers' perspective, the establishment of agricultural practices and autonomy of inputs are remarkable features from traditional agricultural systems and constitute strong motivational factors, probably because they are associated with ancestral practices (56). In addition, family health and food security and sovereignty are strong motivations for farmers, mostly because a large number of them come from a history of working in the flower farms which neighbor their communities. The flower industry has especially impacted women's health and the environment, but it has also resulted in neglected lands as the younger population would rather sell their labor than produce food in their own properties (8,57). A 52-year-old woman from Cubinche stated that her main motivation in the past was: "improving my health and the health of my relatives. Eating fresh and diverse products". Whereas a 60-year-old woman from Santa Rosa de Ayora stated: "I felt motivated by watching how my soil improved. Contemplating the trees and the plants growing was a personal satisfaction for me".

Meanwhile, when agencies were asked about what type of motivations they had utilized to engage farmers, they responded in a slightly different way. Their responses depicted a convergence with farmers' perceptions such as: family health (n = 8; CSV = 0.62) and establishing agroecological practices (CSV = 0.57); however, there were three conspicuous divergences between farmers and agencies motivations: challenging





the conventional practices (CSV = 0.47), improving the environment (CSV = 0.3), and access to services (CSV = 0.22) from the agencies' perspective. Narratives from agency members highlight that the main topics they used to motivate farmers at the beginning were "improving family health and reducing the effect of chemicals on the environment" (especially on soil and water) but also: "self-sufficiency of food for the family, family integration, recovery of the value of traditional food, weaving of social networks".

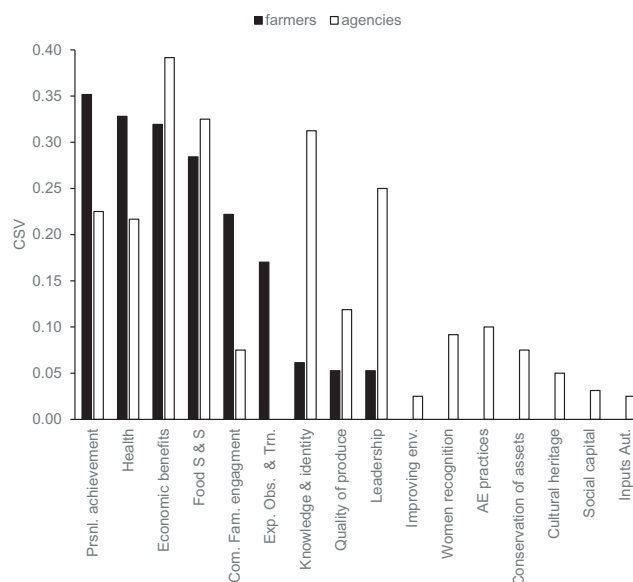
Current motivations for persisting with agroecological practices from the farmers' perspective show convergences with the agencies. Among the first, most important motivations are personal achievement (CSV= 0.35), health (CSV= 0.33), economic benefits (0.32) and food security and sovereignty (CSV= 0.28). Meanwhile, the agencies showed the highest CSV values for economic benefits (0.39), food security and sovereignty (CSV= 0.32), and construction of knowledge and identity (CSV= 0.31; Figure 4). This former motivation together with leadership (CSV= 0.25) showed the major divergence between the perceptions of farmers and agencies. In addition, the agencies reported seven more motivations that were not reported by the farmers. One motivation reported by the farmers: experimentation, observation, and training were not mentioned for the agencies. In fact, we did not find clear evidence of NGOs promoting farmers' engagement in participatory research or collective construction of knowledge.

According to the results, there is a match between farmers and agencies regarding personal achievement as a motivation in the present time, which denotes the relevance of agroecology in the self-perception of farmers, especially women who after decades of working in AE have developed independence and self-esteem, as one agency member declared in an interview. Cultural stereotypes affect the self-perception of women (58), especially because they have historically been denied access to education and because power and achievement has historically been associated with men (59). This argument has also been discussed by Freire (1973) when associating education with freedom; it appears that AE delivered both independence and positive self-perception to women. A 49-year-old female participant from the community of Cariacu said that "having a good reason to go out of the house makes me feel free, and meeting new people was a motivation in itself" while a 48-year-old woman from La Buena Esperanza de Cayambe stated: "I feel self-satisfied from my achievements, from being able to socialize, and I enjoy seeing my peers at the farmers' market".

Economic benefit is another convergence in the present, although it was not very important in the past, maybe because farmers did not have access to marketing their produce without middlemen. But now, in contrast, the opportunity for making a profit is more visible. Farmers stated during interviews that now they are inspired to plant more because sales have increased; however, some conflicts have appeared at certain



farmers' markets due to perceptions of non-compliance with agroecological principles from a few farmers. It is important to reflect on how AE arrived in this territory: as a response to the green revolution's failure to meet the needs of the peasants. An agency member claimed that AE had been proclaimed as an alternative to capitalism in earlier times; however, in the present, there is an increasing interest for economic benefits from both agencies and farmers. This could not be considered illegitimate by itself; however, concerns arise when reading Giraldo's (2019) reflections about the risk of commodification of AE, which should alert farmers and agencies to avoid succumbing to the same type of conventional power that AE initially intended to overcome. Moreover, the growing interest of the provincial government in participating in the expansion of AE, and the municipal government in creating public policy that encourages farmers to engage in AE in exchange for tax reductions may interfere with the possibility of AE becoming an alternative to conventional development (62), bolstering the adoption of agroecological practices without a genuine ideological component (29). Nevertheless, farmers and agencies coincide in the perception of food security and food sovereignty as an important motivation.



**Figura 4**

*Motivations for persisting with the practice of Agroecology in the present. More details on Appendix 1. Abbreviations: food sovereignty and food security (Food S & S), community and family engagement (Com.Fam. engagement), improving environment (improving env.), autonomy of inputs (Inputs Aut.).*

Intrinsic (ideological) motivations such as building knowledge and identity, and building leadership are perceived as high motivations for the agencies but not too high for the farmers, which recalls Giraldo & Rosset, (2018) concerns about AE being co-opted



and stripped off its sociopolitical substance. However, farmers produced quotes that evidence that they do have the will to engage in experimentation, observation, and training, which are elements related to the diffusion of agroecological knowledge with cultural implications: “exchanging knowledge and motivating my friends and relatives is also a motivation for me” said a retired 59-year-old man from the community of Porotog.

### 3.2. Compensations for adopting agroecology

When farmers were asked about their perceptions regarding compensations during the early stages of the development of AE in their communities, their most frequent response was that they received plants and seedlings (Table 2). This coincides with the perception of agencies. Inputs in general, training, and young domestic animals, were reported as compensations by the farmers. All these compensations were handed over by the NGOs. The agency members have a similar perception of the importance of the delivery of inputs and services as compensations for farmers; nevertheless, the agencies report them in a larger proportion than farmers, as showed on Table 2. Agencies also consider that capacity building and leadership, technical assistance, access to markets and participatory guarantee systems (PGS), access to credit, and observation trips were important contributions from NGOs. Farmers feel they currently get compensation from their clients through the farmers’ markets, mainly as a recognition for the work they do.

**Tabla 2**

*Perceived Compensations that influenced past adoption of Agroecology.*

| Compensations                  | Relative frequencies (%) |                |
|--------------------------------|--------------------------|----------------|
|                                | Farmers n = 19           | Agencies n = 8 |
| Plants and seedlings           | 0.632                    | 0.625          |
| Training                       | 0.316                    | 0.500          |
| Inputs (fertilizers)           | 0.316                    | 0.625          |
| Livestock                      | 0.211                    | 0              |
| Observation trips              | 0.158                    | 0.250          |
| Access to credit               | 0.105                    | 0.250          |
| Social acceptance              | 0.105                    | 0.125          |
| Irrigation technology          | 0.053                    | 0              |
| Capacity building & Leadership | 0.000                    | 0.375          |
| Technical assistance           | 0.000                    | 0.250          |
| Implementation of farm designs | 0.000                    | 0.125          |
| Strengthening of organizations | 0.000                    | 0.125          |
| Access to Markets and PGS      | 0.000                    | 0.250          |



From the farmers' perspective, the only perceived compensation associated with ideological aspects is social acceptance, although its score was low. The rest of perceived compensations are related to external incentives (training, delivery of plants, and inputs in general). The agencies did not emphasize the ideological aspects as compensations either, except for capacity building and leadership; which also scored low. For instance, strengthening organizations was less important than the former compensation, and social acceptance had an even lower score. A case study from Brazil points out that personal and political benefits were perceived as compensations by farmers of an agricultural cooperative, and that ideological aspects were associated with pro-active participation of the members (39); however, in our case study, we mainly found external incentives.

### **3.3. Why is agroecology in the agenda of government and non-government organizations?**

Agency members were asked about past motivations for their organizations to include AE in their agendas and the two most frequent answers were: as a response to the failures of the green revolution and its hegemony, and because of environmental concerns (Table 3). On the other hand, the most reported current motivations on the agendas for agency members were concerns about climate change, the convenience that agroecological knowledge and practices are more available at the present, articulation of stakeholders, and existing public policy. Past motivations for NGOs are consistent with the environmental and political concerns of that time in Ecuador (22).

Nevertheless, the agenda of the agencies in no manner concurred with the farmers' perceptions of motivations (Figures 3, 4). Past and current agency' motivations only match for environmental concerns (past) and climate change (present) in their agendas. These results are the evidence that motivations for agencies have evolved in their agendas, except for environmental matters, and that they have probably been dissociated from the farmers' visions, which is evidenced by the low participation that the farmers perceived, especially in the early stages of the adoption of AE in their communities. Voices from the agency members stated: "Funders are open to invest in agroecology because it is considered an alternative for climate change adaptation, for building resilience in the communities", while a governmental authority stated that "in the last years, local governments have started to substitute the role of the NGOs". He additionally said that "after the year 2005, social movements in Ecuador have had more influence than NGOs". This last statement, from someone who has been involved in the historical process of AE in Ecuador, invites reflection about new articulations between



**Tabla 3**

*Motivations for including Agroecology in the agendas of agencies in the past and in the present.*

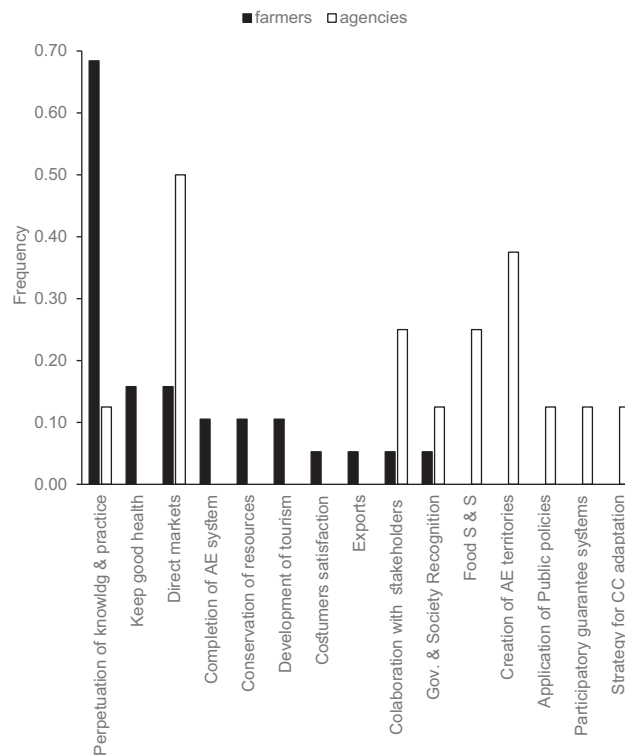
| In the past<br>(n = 8)                     |           | In the present<br>(n = 8)                     |           |
|--|-----------|---|-----------|
| Motivation                                 | Responses | Motivation                                    | Responses |
| Contestation to green revolution hegemony  | 4         | Climate change                                | 2         |
| Environmental concerns                     | 4         | Available agroecological knowledge & practice | 2         |
| AE is transversal to institutional mandate | 3         | Existing public policy                        | 2         |
| Relevant to farmers                        | 2         | Articulation with stakeholders                | 2         |
| Funder mandate                             | 1         | Relevant to stakeholders                      | 1         |
| Need for external recognition              | 1         | Participation of youth                        | 1         |
|  |           | Expansion of agroecology                      | 1         |
|  |           | Health  | 1         |

agroecological practitioners, different levels of government, and other stakeholders in the near future.

### 3.4. What are the expectations for Agroecology in the future?

Perpetuation of agroecological knowledge and practice was the strongest expectation in the replies of the farmers; however, that expectation was not relevant by the agencies (Figure 5). A recent study performed in the same study area claims that agroecological farmers feel very confident about their knowledge, which coincides with their vision of communicating their knowledge and perpetuating it on the field through practice (44). A 49-year-old woman from El Rosario, for example, confirms that her wish is to complete the implementation of the five subsystems on her agroecological farm to promote tourism and to extend her knowledge to visitors. This vision of the future is shown in Figure 5, and echoes with the literature, which reports on the importance of having the farming practices embedded on the farmers’ fields as a pedagogical resource (63).

The access to markets without middlemen is an important expectation for agencies but not too much for farmers, probably because they perceive that the market already exists, whereas the agencies foresee more farmers’ markets, probably in larger municipalities. Keeping good health has some relevance for farmers but not for the agencies. Creation of agroecological territories, food security and sovereignty, and collaboration



**Figura 5**

*Expectations of Agroecology in the future. More details on appendix 2.*

with other stakeholders are notable expectations for agencies, nevertheless, none of the latter got high frequencies by farmers when envisioning the future of AE in their communities. The results for this question should cause concern to agencies and farmers because the lack of convergence between them reveals the different perceptions that stakeholders have about the future of AE in the area of the study. This situation brings about a need to create the conditions for a consensus among the stakeholders to foresee the collective impact at the level of the territory (64,65).

## 4. Conclusions and recommendations

Conclusions:

1. High women participation in agroecology may respond to external agency's policies and mandatory conditions from funding organizations.
2. External rewards were reported by farmers equally as motivations and compensations, with no evidence of conceptual differentiation.





3. Farmers affirm they have been implementing agroecological practices even before that concept arrived into their territories.
4. - The level of participation of practitioners in agroecology has a diachronic evolution that begins with little involvement in the diagnostic and planning phases, ending with a high participation in activities associated with implementation and evaluation.
5. Divergences between the perceptions of the factors that motivate the adoption of agroecology by practitioners and external agencies are greater at the beginning of the process than at present.
6. It is possible that at present there are greater convergences between the motivations of external agencies and practitioners.
7. Both in the past and in the present, practitioners feel more motivated by extrinsic and pragmatic factors than by intrinsic factors.
8. NGOs perceive that their initial motivations for addressing agroecology were more associated with counteracting the effects of the green revolution, while currently they are more associated with climate change. This perception does not coincide with that of the farmers.
9. Some compensations from the agencies may not be perceived by farmers as mechanisms of control because even though such compensations were given after the completion of certain conditions, they were not sufficiently large to create an over justification effect, which would signify a negative effect when used to compensate for something that is already an intrinsic motivation for the farmers.
10. Farmers have experienced the benefits of AE. Additionally, the market is consistently demanding healthy produce. The future agenda for agencies will certainly address climate change, carbon sequestration, and other sustainable practices that are part of the environmental discourse at a general level. However, there is not a clear direction towards the internalization of non-pragmatic motivations and expectations.

## 5. Recommendations

1. A deep reflection about the use of extrinsic rewards as an affirmation of the competence of farmers is required in order to enhance existing intrinsic motivations and avoid using it as a manipulative tool. Using an extrinsic reward for compensating



an intrinsic motivation could be deactivating motivation itself, resulting in passive compliance with a rule for the sake of the reward.

2. The expansion of AE as such should not only consider expanding the number of farms, farmers, or hectares of agroecological crops, but also, and principally, raising awareness about the principles of AE, covering its six dimensions: social, economic, environmental, cultural, political, and ethical. This awareness should be directed towards farmers, consumers, and all stakeholders.

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## Appendix 1

Composite Salient Values (CSV) for current motivations for persisting on the practice of Agroecology.

**Tabla 4**

| Motivations            | farmers<br>CSV | agencies<br>CSV |
|------------------------|----------------|-----------------|
| Personal achievement   | 0.35           | 0.23            |
| Health                 | 0.33           | 0.22            |
| Economic benefits      | 0.32           | 0.39            |
| Food S & S             | 0.28           | 0.33            |
| Com. Fam. engagement   | 0.22           | 0.08            |
| Exp. Obs. & Trn.       | 0.17           | 0.00            |
| Knowledge & identity   | 0.06           | 0.31            |
| Quality of produce     | 0.05           | 0.12            |
| Leadership             | 0.05           | 0.25            |
| Improving environment  | 0.00           | 0.03            |
| Women recognition      | 0.00           | 0.09            |
| AE practices           | 0.00           | 0.10            |
| Conservation of assets | 0.00           | 0.08            |
| Cultural heritage      | 0.00           | 0.05            |
| Social capital         | 0.00           | 0.03            |
| Inputs Autonomy        | 0.00           | 0.03            |

## Appendix 2

Expectations for agroecology in the future. Results of free listing tool for 19 farmers and eight agencies in the study area.

**Tabla 5**

|                                      | Farmers | Agencies |
|--------------------------------------|---------|----------|
| Perpetuation of knowledge & practice | 0.684   | 0.125    |
| Keep good health                     | 0.158   | 0        |
| Direct markets                       | 0.158   | 0.5      |
| Completion of AE system              | 0.105   | 0        |
| Conservation of resources            | 0.105   | 0        |
| Development of tourism               | 0.105   | 0        |
| Costumers satisfaction               | 0.053   | 0        |
| Exports                              | 0.053   | 0        |
| Collaboration with stakeholders      | 0.053   | 0.25     |
| Gov. & society recognition           | 0.053   | 0.125    |
| Food S & S                           | 0.000   | 0.25     |
| Creation of AE territories           | 0.000   | 0.375    |
| Application of public policies       | 0.000   | 0.125    |
| Participatory guarantee systems      | 0.000   | 0.125    |
| Strategy for CC adaptation           | 0.000   | 0.125    |