Agroecology in Ecuador: Historical Processes, Achievements and Challenges

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ABSTRACT

Agroecology in Ecuador has developed from its early stages as a little-known, incoherent response to the Green Revolution into a serious agrarian model, with key principles enshrined in the country's Constitution and Food Sovereignty Law. This article provides a historical overview and analysis of this process, highlighting key actors, events and challenges. In particular this article reveals that the adoption of agroecology as a form of resistance by indigenous and peasant movements played a key role in its development. Furthermore, articulation between organizations, academia, and public institutions helped agroecology grow in conceptual depth, national reach and political influence. Nonetheless, as the stalled passage of the law on agrobiodiversity demonstrates, significant obstacles to implementation remain.

Keywords: Agroecology, food sovereignty, peasant resistance, agrobiodiversity, Ecuador.

1. INTRODUCTION

Agroecology, as defined since its emergence, is "the scientific basis for an ecological agriculture" (Altieri, 1985). Nonetheless at a global level, and in particular in Latin America, agroecology has taken on added significance as a form of popular resistance against the advance of agribusiness, and a means of forging a society in which food takes priority

Agroecology in Ecuador reflects the heterogeneity of a megadiverse country that is sub-divided into four geographic zones: the coastal area, the Andean highlands, the Amazon, and the Galapagos Islands. Furthermore, Ecuador is home to fourteen nationalities and eighteen ethnic groups, each with its own relationship to the ecosystem. These groups have all confronted the expansion of agribusiness and other threats to their productive capacity. The scale of these agro-ecosystems varies significantly, ranging between one and fifty thousand square meters in size while nevertheless supporting peasant family agriculture. These sharp contrasts – which include diverse landscapes, ecosystems, and socio-cultural contexts shaped by historical forces – have significantly affected the agroecology of each region.

The significant organizational capacity of the Quichua indigenous peoples meant that in the Andean highlands nutritional agroecological models were adopted as a result of the long-standing agrobiodiversity associated with ancestral knowledge. However severe limitations in terms of access to land and water were encountered, leading to the phenomenon known as the '*minifundio*' (small holding). The coastal region provides important examples of diversified peasant production, even though this was the favored region for the expansion of mono-cultivation structures associated with large-scale agro-exporting. This dynamic led

to sections of the peasant population being absorbed under conditions of subordination and labor exploitation, along with exposure to agro-toxins. Nevertheless a significant number of families maintain farms where they practice agrobiodiversity, and which serve primarily to provide food for their own consumption. In the Amazon a distinct logic operates. A combination of colonization by cattle ranchers, oil exploitation and deforestation places severe pressure on ancestral communities that are gradually becoming more exposed and vulnerable. Nonetheless they continue to resist the loss of their autonomous production model with its links to the rain forest.

The diversity and peculiar features of Ecuador make it a fertile country, sustained by the ancestral knowledge of its people. For this reason the agroecology adopted in different locations varies significantly. It is a complex task to comprehensively present all of the information on the historical and current processes relating to agroecology. However, there is a generalized consensus among peasant farmers and consumers that agroecology represents the best alternative for overcoming current and future food crises.

In spite of urban expansion, industrialized agriculture, and the extraction of natural resources – all of which impact on native communities – ancestral knowledge and customs continue to play a crucial role in the construction of new agrarian models. A summary of these ancestral systems is set out in Table 1.

2. PHASES OF DEVELOPMENT OF AGROECOLOGY IN ECUADOR

The development of agroecology in Ecuador has passed through at least four phases, during which it has evolved from emergence to consolidation and expansion. This section will present a chronology of the development of the agroecology movement in contemporary Ecuador.

2.1 Phase One (1980-1990): Emergence, Debates and Fundamental Principles

From the 1980s onwards Ecuador witnessed an expansion of agro-industrial models of production. This development merely served to sharpen inherent contradictions, and to heighten the need for viable alternative propositions. This phase saw not only the opening of this debate, but also the implementation of agroecological proposals (generally described as 'alternative agriculture') by professionals, enthusiasts, and NGOs in consultation with peasant and indigenous movements.

Even in those early years the work of certain researchers supported the case for the rationality of traditional agricultural systems. On the basis of their findings, they proposed the regeneration of diversified systems and the reintegration of animals and crops (contradicting the conventional wisdom that proposed the fragmentation and specialization of agrarian systems). Indigenous and peasant organizations were struggling to achieve recognition of their ethnic and cultural identity, and their political rights. One of their key demands was for the revitalization of traditional forms of production and subsistence.

These different debates and organizational processes permit the definition of the technological principles of agroecology, and highlight its integration with ancestral

agriculture. The principal contributions to this process from within Latin America emanated from: the Chilean and Peruvian schools; the Latin American Consortium on Agriculture and Development (CLADES); the Centre for Technological Education (CET); and individuals such as Yuryevic, Toledo, Letleier, the Brazilian School of Luxenberger, Pinheiro, Primavesi and others, and the Colombian Restrepo. The rigorous academic work of Altieri and other agroecologists that would later give rise to the Latin American Scientific Society of Agroecology (SOCLA) have made invaluable contributions to the formation and training of the first experts and peasant organizers.

During these years those indigenous and peasant organizations with a nationwide presence underwent a process of construction and politicization of their historic discourse. Agroecology does not fit easily into these categories due to an emphasis that is more technological than political. However this approach had more success with organizations working at a provincial or regional level because it was able to provide concrete solutions to the everyday problems confronting peasant families leading many isolated peasant families to begin employing agroecological methods.

The first forays into the realm of alternative agriculture were often influenced by European or North American professionals and volunteers who brought with them knowledge of biological and organic farming respectively. The Ecuadorian Corporation of Biological Producers (PROBIO), created at the end of the 1980s by a variety of enthusiasts and promoters of biological/organic agriculture, followed this trend. It even incorporated an early articulation of organic norms and guarantees, having reference to Europe and in the International Federation of Organic Agriculture Movements (IFOAM). Particularly

recognized at this time was the work of Pacho Gangotena and his family, who established the Chaupi Molino ranch in the outskirts of Quito. The Brethen Foundation, and later Swissaid, initiated the first projects with an alternative orientation. Similar situations arose in the south of the country, in Azuay province, where programs and projects run by NGOs awakened a keen interest in these methods. In the Central Sierra the Popular Radiophonic Schools (ERPE), with the help of international volunteers, began training sessions and established the influential San Antonio demonstration farm. This holding on the outskirts of Riobamba served for many years as a center for demonstration, production and research for the development of organic agriculture in the highland region. With a wide diversity of local horticultural, fruit and tuber varieties, the farm permitted experiments with techniques for organic management of soils, pests and illnesses.

The indigenous uprising of 1990 began with the occupation of Santo Domingo Church in the capital city Quito on May 28th. According to newspaper reports, a group of between 800 and 2,000 persons took over the church in a peaceful manner. Furthermore, it was reported that the action was organized by the Popular Coordinator, an umbrella body under which were grouped indigenous movements the Confederation of Indigenous Nationalities of Ecuador (CONAIE) and the Confederation of Peoples of Kichwa Nationality (ECUARUNARI),, the Ecumenical Commission for Human Rights, and other civil society organizations. The occupation of Santo Domingo had a symbolic importance, as the church was historically associated with white/*mestizo* community. It was the first time that this sector had witnessed indigenous people take control of a building considered hitherto an exclusively *mestizo* space. The occupation lasted for ten days before the government of President Borja agreed to talk to CONAIE, and even then only after protesters had declared

a hunger strike. The main concerns of the organizations involved related to land conflicts. By accepting the sixteen points presented by CONAIE, the state opened a new phase of dialogue and negotiation with indigenous peoples. This entirely new dynamic between indigenous actors and the state opened up new political possibilities for developing alternative models including agroecology.

2.2 Phase Two (1990-1996): The Evolution of the Agroecology Paradigm

The 1990s witnessed a series of historic achievements that allowed agroecology to evolve by incorporating social and political dimensions. The beginning of the decade saw huge indigenous mobilizations marking 500 years of resistance, which were led by CONAIE and included numerous groups of workers, teachers and other civil society organizations. These actions were supported by human rights groups and sectors of the Catholic Church inspired by Liberation Theology, who distanced themselves from a church hierarchy opposed to the indigenous movement. These mobilisations marked the beginning of a new phase of ideological and political contention in Ecuador, as elsewhere in the Americas. In 1992 the Rio de Janeiro Summit initiated a debate around sustainable development, a concept that was rapidly co-opted by corporations and a capitalist system seeking to put a “green and human face” on the globalization of markets.

At that time many had begun to question the results of the development processes of the preceding decades. Simultaneously, the problems caused by the Green Revolution were giving rise to increasing criticism. These tensions helped to formulate alternative thinking regarding the focus and practice of rural development. The institutions and organizations

that drove the promotion of agroecology became aware of the need for articulation at a national level. This realization led to the formation in 1990 of the office of Ecuadorian Agroecology Coordinator (CEA). While strictly speaking CEA was a network of NGO's, the forms of resistance pioneered by peasant and indigenous movements were a consistent and powerful influence on its approach (Peralbo 2004).

The Latin American Agroecology Movement (MAELA), founded in 1993, succeeded in articulating efforts at regional integration, advancing debates and putting agroecological principles into practice. Beyond its technological content, agroecology presents a different way of looking at and interacting with the world. It presupposes a questioning of development models and a greater impact on public policy than the mere promotion of the modernizing logic of agriculture, with its heavy focus on integration into the global market.

2.2.1. Via Campesina and the Dialogue between Agroecology and Food Sovereignty

The years 1995 to 1996 saw the commencement of a phase in which agroecology was linked to peasant models of development in a way that superseded mere technological support. This process coincided with efforts at articulation between the main peasant organizations at a global level. This in turn gave rise to Via Campesina International (LVC), which in 1996 outlined the paradigm of Food Sovereignty. The concept's influences are to be found in the struggles of social movements in Mexico against the North American Free Trade Agreement (NAFTA). The proposals that emerged were swiftly taken on by LVC and presented at the Food Summit in Rome. This international dynamic strongly influenced internal debates within Ecuador's peasant organizations and NGOs,

helping them to go beyond the limitations of the discourse on sustainable development or other forms of green capitalism.

The concept of Food Sovereignty was shaped significantly by the globalization of agro-food markets and its effects on peasant agriculture. Agroecology, for its part, had a more technological emphasis. The result was that as the two concepts and processes grew closer, matured and found ways to empower and support each other.

2.3. Phase Three: The Energizing of the Agroecology Movement and its Multidimensional Perspective on Food Sovereignty (1996-2006)

It was during this period that the proposal advanced by agroecology broadened, was more widely disseminated, and acquired a more comprehensive, multi-dimensional focus. Important training programs for peasants, technicians and agroecological promoters were consolidated; the academic sector was more enthusiastically embraced; and gradually NGO-led initiatives linked to the original incarnation were overtaken. Instead agroecology became a central demand and daily practice of peasant and indigenous organizations, one that originated from their own thinking and adopted as a form of peasant resistance. For example, ECUARUNARI and CONAIE forcefully reclaimed traditional production, while the National Confederation of Peasant, Indigenous and Afro-Ecuadorian Organizations (FENOCIN) began to talk repeatedly about re-energizing ancestral agriculture. In Ecuador's coastal region, the Federation of Agricultural Centers and Peasant Organizations of the Littoral (FECAOL) was established as a forceful response to the landowning class,

one which would subsequently give rise to the development of alternative agriculture and the protection of diversified '*montubio*' farms.

The dialogue between Food Sovereignty and Agroecology moved to another level when sovereignty was understood as the right of peoples to control their agro-food systems. In other words, the concept centered on the capacity to decide 'what, how and when' to produce and eat. Agroecology offers a practical response to this challenge and a means to fulfill its promise, as outlined by Fernando Larrea:

> Industrial agriculture of big capital displaces through expansion peasant agriculture (such as banana plantations or palm oil cultivation in the coastal region) or it integrates it by subordinating the workforce (as with the flower-growing industry in the mountain region). In this context agroecology may offer the only form of peasant resistance because it interferes with the logic of capital domination. Thus a diversified agroecological holding does not transfer the value of peasant labor (by subordination) but rather integrates it in an autonomous fashion. Nor does it transfer the value of the agricultural produce (via unremunerated market demand) but instead achieves a self-sufficiency of food needs and services the alternative market. Finally, it breaks the technological dependency by renouncing the packages of the Green Revolution. Instead it gives rise to a different form of development for peasant agriculture[1].

Another important development during this period was growth in markets, which gave viability to agroecological peasant production in short commercialization periods. This

[1] Personal communication with Fernando Larrea, former Director of Heifer Ecuador Foundation, 2015.

phenomenon helped to consolidate numerous contacts and agroecology networks in various parts of the country, in turn giving more visibility to the work carried out over preceding decades (Heifer 2005).

Another aspect which was strengthened was the level of regional exchange. Within Latin America the influence of Brazil is powerful, and in particular that of the Landless Workers Movement (MST). The MST consciously adopted agroecology as both policy and practice having experienced the notable failure of conventional agriculture in the settlements formed by agrarian reform. This belief duly spread to all of the peasant movements on the continent.

At the first National Agroecology Summit in Quito in 2006, organized by CEA, many of these points were discussed, and a new phase in the history of Ecuadorian agroecology began in which new actors and forms of articulation appeared, along with a new energy.

2.4 Phase Four (2006-2016): Political Implications and Expansion

In the first decade of the new century Ecuador experienced a complex political and social conjuncture[2]. The political landscape altered radically when a combination of social movements and progressive political actors managed to channel this contestation into a national Constituent Assembly to write a new constitution (Silva 2009). The Constitution of

[2] We refer to the series indigenous uprisings and popular mobilisations that between 1995 and 2002 brought about the ouster of three governments, and which succeeded in halting the progress of the Free Trade Area of the Americas (FTAA), the bilateral Free Trade Agreement (FTA) with the US, and the imposition of neoliberal policies (Silva, 2009).

2008 brought together many historic demands (Becker 2011), and created a new social, economic and political pact which has yet to fully mature.

Unsurprisingly the different peasant organizations, networks and institutions that had been established around agroecology were actively involved in this period of acute debate and definition of the direction of public policy (Heifer, 2014). As Giunta notes, the enthusiasm for participation shown by these long-excluded actors "suggested the peasants' willingness to prove that they were key productive and political subjects able to rethink a different society" (Giunta 2014: 1213).

The discourse of agroecology places a new emphasis on questioning the notion of progress and the supposed neutrality of science and technology. On the basis that technology is at the heart of capitalism, this discourse contends that it is impossible to consider an autonomous form of peasant development within the framework of the Green Revolution. This model subsumes the ability to decide how or what to produce to the logic of market forces, which by their nature cannot be controlled. This model of development therefore omits the field of peasant and community agriculture, and obstructs the realization of food sovereignty. It is in this context that agroecology takes on strategic importance, as it implies a path of liberation which leads toward true development and supports the realization of *Sumak Kawsay*, the Quichua concept of good living[3].

[3] This Quichua word meaning 'good living' is the political philosophy that underpins the new Ecuadorian constitution (Becker, 2011: 50).

It was within this framework of *Sumak Kawsay* that the Agroecological Collective of Ecuador was formed in 2007[4]. This group renewed efforts to articulate between the diverse social actors involved in agroecology, but with a different approach. The Collective focused on networks and activism, and activities included expansion and permanent awareness-raising campaigns. These methods were effective in energizing the agroecology movement, integrating new actors, and reaching into new territories[5]. As Vallejo notes, the Collective "has allowed for the stimulus of campaigns that along with promoting agroecology have drawn attention to the close links between organizations and consumer networks, which has increasingly led to a more political connection between city and countryside" (Vallejo 2015)[6].

This collective effort added a political aspect to agroecology, particularly when it was integrated into the work of the peasant and indigenous movements that were involved in the construction of the constitutional article and subsequently the Organic Law of the Food Sovereignty Regime (LORSA).

On the other hand, agroecology in Ecuador has assumed as its principal struggle the resistance to the entry into the country of genetically modified organisms (GMOs). The threat posed by GMOs to agrobiodiversity, native seeds and food sovereignty has crucially led to the unifying all the relevant actors in the country. Peasant organizations, the

[4] Founding members 2007: UTOPIA and the Sea, Land and Basket Network (MTC); Guardians of the Seeds Network (RGS); the Association of Biological Producers of Ecuador (PROBIO); Agroecology Coordinator of Ecuador (CEA). Sponsored by Heifer Ecuador, VECO (Cooperation Belgium) and Global Neighbors (now Ekorural). In fact dozens of peasant organizations, consumers, academic institutions and organized groups were behind this collective effort.

[5] The first campaign "Eat Healthy, Safe and Sovereign" gained recognition around the country, and its public image "La Pacha," became an emblem of both Food Sovereignty and Agroecology.

[6] Fernanda Vallejo, Heifer Ecuador, permanent director of the agroecology and food sovereignty movements; personal interview 2015.

National Commission of Consumers for Food Sovereignty, and the Agroecological Collective of Ecuador have combined to lead the resistance to GM crops. Also of note is the work of *Ecology Action* (AE) and the Network for a Transgenic-Free Latin America (RALLT). These organizations have carried out important actions against GM products in Ecuador, including forums, debates, media appearances, research projects, and marches.

One of the most important activities in this context has been a national program for monitoring crops and seeds destined for human consumption, in order to detect the possible illegal introduction of GMO's. The results of this program are presented below in Table 2.

3. THE SOCIAL ACTORS OF AGROECOLOGY

Agroecology is no longer an unknown alternative in Ecuador. Its principles and strategies are now discussed by actors at all levels of society, including academics, scientists, peasants, public and private workers, governmental and international institutions – each with its own approach and motivation for promoting agroecology. That these discussions are taking place within institutions that range from the highest political levels to grassroots peasant organizations is of crucial importance for the creation of new concepts and the consolidation of a common proposal with broad participation.

The government's adoption of so-called 'Socialism of the Twenty-First Century' as its guiding philosophy began progressively in seeking to establish a new political system (Becker 2013). However in spite of early popular approval, particularly by peasant organizations, this paradigm has failed to incorporate into its agenda the creation of a new

food system in any significant way (McKay et al. 2014; Clark 2016) Rather than permitting the independence, liberty and control of peasants over their productive systems, it has promoted the strengthening of conventional agriculture and agro-exportation by means of state support and subsidies on agro-toxins, with the aim of creating a new productive matrix (Colectivo Agroecológico 2013).

In this context the role played by peasant organizations across the country is highly significant. In spite of their economic and political limitations, these actors have continued their efforts to forge a new agrarian model. In this context, agroecology serves as the symbol of the struggle to develop a new agro-food system that can generate new relations between urban and rural sectors, and in turn reinforce food sovereignty. One of the most important contemporary milestones at a national level was the establishment of the National Agroecology School. The school, which recently completed its third enrolment, has managed to bring to the table almost all of the peasant organizations in the country.

In addition, other spaces for debate, training and promotion of agroecology have been organized. Prominent among these has been the Agroecology Workshops put together by the Agroecological Collective of Ecuador and SOCLA Ecuador. Three such sessions have taken place in the past four years, leading to a concerted effort at articulation that saw over thirty public forums and huge seminars draw over 6,000 participants in eleven locations throughout the country. Furthermore, the National Day for Food Sovereignty and Agroecology – jointly organized by FECAOL, the Collective and other social organizations – has been held for the past five years. The event has seen over 8,000 participants, mainly peasants, march in Guayaquil to celebrate and draw attention to agroecology. Also of

significance is the recent creation by CEA of the National Agroecolgy Commission, which has opened up important spaces for reflection and articulation. Table 3 below contains details of a selection of peasant organizations working on agroecology at provincial and regional levels. While there are many organizations not named here, it provides an indication of the breadth, variety and significance of the agroecology movement in Ecuador.

3.1.Visions of Agroecology

It is commonly acknowledged that the agroecolgy as a model varies significantly between different actors. According to Giraldo and Rosset (2016), these variations take two main forms: one comprised of official government institutions, international agencies and private companies; the other of different social movements that defend agroecology as the only viable option for the radical transformation of the prevailing agrofood system. In Ecuador it is possible to identify at least four distinct visions of agroecology, each one associated with a particular group of actors. These different visions are not fixed, and this flexibility gives an important dynamic dimension to agroecological activity.

First of all, there is the 'technical-academic' vision promoted by several NGO's and academic bodies. This vision reduces agroecology to a series of practices and techniques designed to create a cleaner, more responsible and sustainable agriculture. The second vision can be described as 'demagogic-governmental'. This approach attempts to co-opt agroecology to particularistic interests in local or central government. Next is the 'agro-exportation' vision, the objective of which is to achieve clean production for the global

market, and is promoted by the agri-business sector. Lastly is the peasant vision of agroecology, which is rooted in food sovereignty as a means to improve peasant economies, personal health, the sustainability of resources, and the independence of production and commercialization.

4. THE COMMERCIALIZATION OF AGROECOLOGY

The commercialization of agroecological produce directly from peasant to consumer has extended to all parts of the country due to its inherent requirement to sell at fair prices. In this way agroecology contains a criticism of processes such as organic certification, private certification bodies, and the 'elitization' of healthy produce, all of which serve to create differentiation between markets for the rich and for the poor. Nevertheless there is also an increasing desire on the part of the private sector to control agroecological production due to the growth in public acceptance. A further factor is the wide diversity of agroecological products which, for the time being, remain in the hands of peasants that do not have access to supermarkets, and who instead commercialize their produce via local initiatives such as markets, food baskets, farm shops, among others. Most commercialization takes place at farmers' markets (78%), with the Andean region accounting for the vast majority (82%). These markets are particularly suited to small producers with little land wishing to sell their produce (Heifer Ecuador, 2014).

These commercialization systems are guaranteed by the Participative Guarantee System (SPG), based on relationships of trust between producers and consumers. Via the mechanism of SPG, peasant organizations manage to promote and spread agroecology

throughout the country. Furthermore, the system guarantees the transparency of the cultivation process that agroecological producers undertake on their farms. Table 4 below presents a list of agroecological commercialization initiatives launched in Ecuador.

5. AGROECOLOGY IN HIGHER EDUCATION

Academia played an important role in facilitating the introduction of agro-toxins into Ecuador. Academic curricula and content were created that responded to the interests of multinational corporations, trained professionals with a limited and simplified vision of agriculture, ignored ancestral peasant knowledge, and abruptly introduced new agrarian paradigms which were presented as the sole valid criteria for farm production. This approach led to a distancing between academia and the rural sector.

In recent times however this has changed. Currently a number of universities in Ecuador are offering educational programs that include agroecological content. Although these elements do not carry the same weight in the curriculum as those dedicated to conventional agriculture, nonetheless they have had positive impacts in academic circles. Table 5 below presents a list of universities that offer agroecological programs and activities.

The inclusion of agroecology in academic curricula is a response to the influence of social organizations, NGO's, students[7], lecturers and consumers who have adopted the proposal as a viable alternative. This phenomenon has forced academia to reconsider its approach and

[7] This was the case with a group of agronomy students at the Catholic University in Guayaquil called the AGROECOLOCOS who were pushing for the inclusion of agroecology in the academic program.

pay more respect to the local knowledge of the peasants who manage the country's eco-systems on a daily basis. This approach has in turn given rise to an exchange of knowledge, and created an indispensable source of agricultural research. At the time of writing, agroecology is forming a crucial bridge between academia and peasants, one that remains under construction.

6. LEGAL FRAMEWORK

Beginning with the adoption of the Constitution in 2008, important legal advances were made in support of Agroecology and Food Sovereignty. These moves were greeted with approval by social movements, particularly peasant and indigenous organizations. The articles of the Constitution which come closest to planning a route toward an agricultural system in harmony with the natural world are:

> Article 281: Food sovereignty is a strategic objective and an obligation of the State in order to ensure that persons, communities, peoples and nations achieve self-sufficiency with respect to healthy and culturally appropriate food on a permanent basis.
>
> To this end, the State shall be responsible for: c) bolstering diversification and the introduction of ecological and organic technologies in farm and livestock production... f) promoting the conservation and recovery of agricultural biodiversity and related ancestral wisdom, along with the use, conservation and free exchange of seeds... h) ensuring the development of appropriate scientific research and technological innovation to guarantee food sovereignty... j) strengthening the development of organizations and networks of producers and consumers, along with

> those for the marketing and distribution of food stuffs, so as to promote equity between rural and urban spaces.

There are other articles which set out the same thesis, beginning with responsibility for the use of and research into technologies which threaten biodiversity, and particularly the prohibition on the use of transgenic seeds:

> Article 401: Ecuador is declared free of transgenic crops and seeds. Exceptionally, only in the interest of the nation as duly substantiated by the President of the Republic and adopted by the National Assembly, can genetically modified seeds and crops be introduced into country.

In accordance with the Constitution, in 2009 (with an amendment in 2010) LORSA was adopted. With regard to agroecology, the law states:

> Art. 14: The State shall stimulate agroecological, organic and sustainable production by way of promotion, training programs, special lines of credit, and commercialization mechanisms within both the internal and external markets, among other measures. Public purchasing programs shall give priority to associations of agroecological producers (National Assembly, 2009).

The law further stimulates the production of healthy food as follows:

> Art. 27: The State shall, with the purpose of diminishing and eradicating under-nutrition and malnutrition, incentivize the consumption of nutritious food preferably of agroecological or organic origin, by way of supports for its commercialization, promotion programs and nutritional education for a healthy diet (National Assembly, 2009).

In accordance with the terms of LORSA the Plurinational and Intercultural Conference on Food Sovereignty (COPISA) was established as an organism of citizen power, with the purpose of promoting new policies relating to agriculture and food. It was COPISA that wrote the Law of Agrobiodiversity, Seeds and Agroecological Promotion (COPISA, 2009) with the participation of more than 2,500 members of organizations of agroecological producers, consumers and others. The text of the law was delivered in 2012, constituting the first attempt by the agroecology movement at making its voice heard in the National Assembly. At the time of writing the law is still being debated.

CONCLUSION: THE HISTORIC CHALLENGE OF THE ECUADORIAN AGROECOLOGY MOVEMENT

Agroecology in Ecuador has travelled a path over a number of decades that has seen it mature into a serious and powerful proposal for a new agrarian model. Currently the country faces a variety of challenges that can be resolved by reference to agroecology, such as climate change, rural poverty, the need to recover the strength and vitality of agroecosystems, the production of healthy food and the conservation of agrobiodiversity. Agroecology has become the link between the city and countryside in the defense of food.

Agroecology has formed part of the historic demands of indigenous, peasant and *montubio* movements in Ecuador. Over the years these actors have called for a comprehensive agrarian reform, for a just and equitable distribution of productive resources like water and land, for control and sovereignty over their seeds, and for meaningful participation in the

making of decisions that affect rural societies. Among the challenges they face are to undo prior norms which limit access to productive resources, to defend the 'GM-free' status of the country, and to achieve synergy between actors with regard to agroecological proposals.

Agroecology emerged as a response to peasant exclusion and desperation, but represents a path to liberation. It makes possible the recovery of control over agro-food systems and achieving food sovereignty by indigenous and peasant communities. Their success or failure will principally depend on the ability of movements to strengthen agroecology regardless of political circumstances or private interests, and to continue to forge alliances with other sectors working toward the same end, including academics, NGO's and consumers.

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List of Acronyms

ACRI	Association of Coffee Growers of the Intag River
AE	Ecology Action
APAA	Association of Agroecological Producers of the Austral
AUCM	Unity Assembly of the Canton of Montufar
AVSF	Agronomists and Veterinarians Without Borders
CCFA	Peasant Agroecological Credit Union
CEA	Ecuadorian Agroecology Coordinator
CEDEIN	Center for Indigenous Development
CEPCU	Center for Pluricultural Studies

CET	Centre for Technological Education
CLADES	Latin American Consortium on Agriculture and Development
COMICH	Confederation of Indigenous Movements of Chimborazo
CONAIE	Confederation of Indigenous Nationalities of Ecuador
COPISA	Plurinational and Intercultural Conference on Food Sovereignty
COPROBICH	Corporation of Organic Producers and Merchants of Chimborazo
CORPOPURUWA	Corporation of Producers of Puruwa
ECUARUNARI	Confederation of Peoples of Kichwa Nationality
EFA	Regional Agroecology School
ERPE	Popular Radiophonic Schools
FECAOL	Federation of Agricultural Centers and Peasant Organizations of the Littoral
FECONIC	Federation of Afro-Ecuadorian Communities and Organizations of Imbabura and Carchi
FENOCIN	National Confederation of Peasant, Indigenous and Afro-Ecuadorian Organizations
FICI	Indigenous and Peasant Federation of Imbabura
IFOAM	International Federation of Organic Agriculture Movements
IMBABIO	Biological Production Market Network of Imbabura
LORSA	Organic Law of the Food Sovereignty Regime
LVC	Via Campesina International
MAELA	Latin American Agroecology Movement
MESSE	Social and Solidarity Economy Movement of Ecuador
MIC	Indigenous Movement of Cotopaxi
MST	Landless Workers Movement

NAFTA	North American Free Trade Agreement
PACAT	Union of Agroecological Producers and Associative Commercialization
PROBIO	Ecuadorian Corporation of Biological Producers
RAA	Agroecology Network of the Austral
RAL	Agroecological Network of Loja
RALLT	Network for a Transgenic-Free Latin America
REDESOL	Solidarity Economy Network
RESAKK	Solidarity Economy and Food Sovereignty Network of Kayambi Territory
SOCLA	Latin American Scientific Society of Agroecology
SPG	Participative Guarantee System
UNORCAC	Union of Indigenous Peasant Organizations of Cotacachi

Table 1: Characteristics of agricultural systems in Ecuador

AGRICULTURAL SYSTEM	DEFINING CHARACTERISTICS
Chakra Andina	Widely practiced among the Quichua people of the highlands/ involves the management and adaptation to various sub-climates affected by altitude/ national hub of crop production and livestock/ highly developed system of seed conservation and management/ well-developed and up-to-date calendar of celebrations related to agriculture, centered on the Festival of the Sun (*'Inti Raymi'*).
Finca de los Pastos	Practiced in the province of Carchi, moorland ('*páramo*') region in the northern Andes/ ancestral features in the technology of minimal tilling called '*Wachu rozado*'/ integrated system of silvopasture and pastoral potato/ significant knowledge of '*páramo*' ecosystem.
Huerta de los Paltas	Practiced in the province of Loja, in the Paltas canton/ adaptation of an extremely dry climate/ technological innovation of a slow-release irrigation system from lakes and riverbed agriculture/ diversified agroforestry system
Aja Shuar	Widely practiced system among Shuar populations in the Amazon (principally Morona and Zamora provinces)/ very high agrobiodiversity (over over 120 species per ha.)/ roving agriculture system camouflaged by Amazon rainforest/ the plot ('*aja*') is moved every 2 or 3 years and it returns to a cycle of natural regeneration/ deep spiritual connection to the natural world.
Chakra Amazónica	High agrobiodiversity, riverbed agriculture/ understanding of the functioning of the soil fertility cycles of the Amazon and the dynamics of the river.

Finca montubia	Adaptability to dry humid ecosystems/ high agrobiodiversity/ integration of farm subsystems (principally tropical fruits), plots (vegetable gardens and family larders), and infiltration lakes.
Pueblo de manglar	Integrated management of five ecosystems including estuary fishing, gathering, and diversified agriculture.
Canoeras, colinos y canteros	Integrated management of three agricultural sub-systems including '*canoera*' (elevated plots), '*colino*' (diverse fruit farms) and plots of sugar cane (system of rotation of cane)/ river fishing/ hunting and gathering in tropical rain forest/ Chachi-Afro interculturality in the north of Esmeraldas.

Source: Gortaire (2014)

Table 2: Monitoring of GMO's in Ecuador

CROP	RESULTS	AUTHORS
Corn (ears)	No GMO's detected	Bravo and León (2013)
Canola (seeds)	No GMO's detected	Vallejo and Cedillo (2014)
Soya (grain for human consumption)	19 positive results from a sample of 70 evaluated	Intriago and Bravo (2015)
Soya (leaves)	19 positive results from a sample of 70 evaluated	Intriago and Bravo (forthcoming)
Alfalfa (leaves)	No GMO's detected	Results not published

Table 3: Selected organizations promoting agroecology in Ecuador

ORGANIZATION(S)	ACTIVITIES
FECAOL	Organize a Regional Agroecology School (EFA) in the provinces of the coastal region (Guayas, Los Rios, Manabi, Santa Elena, El Oro). Organizes agroecological markets in Guayaquil. Established a Peasant Agroecological Credit Union (CCFA) and a plant for the manufacture of organic fertilizer for farmers transitioning to agroecology. Each year FECAOL convokes the March for Agroecology, Food Sovereignty and Against GMO's in Guayaquil.
UNORCAC – FICI – AUCM – IMBABIO - FECONIC – Red Biovida - RESAKK	Involves organizations from the northern zone of Pichincha, the provinces of Imbabura and Carchi. Receives support from NGO's such as Pueblo Vibrante, AVSF, CEPCU, CARE, Oxfam.
ACRI – Consorcio Toisan	Promotion of agroecology, organic coffee growing, defense of nature and resistance to mining in Intag in the north-western zone of Cotacachi-Imbabura.
MIC	In the province of Cotopaxi the indigenous movement has for many years developed activities promoting agroecology, farmers' markets and training.
PACAT	Over 500 farmers from 34 grassroots organizations in the province of Tungurahua work with an agroecological focus, organize agroecological farmers' markets in the city of Ambato.

	Provide training programs by way of exchange of experiences and the recovery of local knowledge.
CEDEIN – COMICH – Utopia Riobamba – COPROBICH – CORPOPURUWA	Various local organizations and networks in the province of Chimborazo that promote agroecology and the organic production of quinoa/ organize farmers' markets and agroecological shops.
RAA – APAA – REDESOL – Chuya Mikuna	Promotion of agroecology, organization of Training Schools and agroecological farmers' markets in the southern part of Ecuador.
RAL MESSE (Loja)	Agroecology network of Loja composed of diverse peasant organizations that promote agroecology in the province with farmers' markets, training processes and other activities.
Asamblea de los Pueblos del Sur	Promotion of two agroecology schools at the cantonal level and the commercialization of produce directly to the consumer in Loja/ defense of their territories and the rights of nature and water against mining activity.
Clínica Ambiental	Work with those affected by oil activity and agro-industry in the provinces of Sucumbios and Orellana to restore the environment by means of agroecological production.

Table 4: Commercialization of agroecology in Ecuador

COMMERCIALIZATION ACTIVITY	NUMBER (NATIONWIDE)
Food basket programs	8
Farmers' markets	102
Barter markets	2
Restaurants	6
Bars	1
Shops	10
Farms	2
Distributors of canned goods	1
Distributors of agroecological produce	1

Source: Peña et al. (2012)

Table 5: Academic approaches to Agroecology in Ecuador

UNIVERSITY	RELATED ACTIVITY	OTHER ACTIVITIES
University of Guayaquil	Department of Agroecology	Agreement with SOCLA. National Festival of Food Sovereignty since 2014.
State University of the Peninsula of Santa Elena (UPSE)	Department of Agroecology	Agreement with SOCLA.
Agrarian University of Ecuador	Department of Agroecology	
Technical University of Quevedo	Department of Agroecology	
Laica Eloy Alfaro of Manabi University	Department of Agroecology	International Congress for Development in Manabi (every 2 years in Chone)
Catholic University of Guayaquil	Department of Agroecology	Includes a student movement that promotes agroecology
Superior Polytechnic School of the Littoral	Department of Agroecology	Student research forum which includes agroecology
University of the Armed Forces (ESPE)	Post-graduate degree in Sustainable Agriculture	
University of Cuenca	Department of Agroecology Masters in Agroecology	
Technical University of Ambato	Department of Agroecology Masters in Agroecology	

Technical University of Cotopaxi	Department of studies related to Agroecology	
Superior Polytechnic School of Chimborazo	Department of Agroecology	A range of courses and research programs and centers of bio-inputs
Central University of Ecuador	Cátedra agricultura orgánica Maestría en Agroecología (en proceso de construcción) Department of Organic Agroecology Masters in Agroecology (in the process of construction)	Experimental farm with an agroecology focus
Salesian Polytechnic University	Masters in Agroecology	
National University of Loja	Catamayo Corporation – Bi-national Centre of Technical Formation	International Seminars on Agroecology and Food Sovereignty. Publication of didactic guide: 'Integral Productive Farm Education' with a focus on agroecology.
Holy Spirit University (UEES)	N/A	Agreement with SOCLA.