

Agroecological transition towards sustainable food. A human survival strategy

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Abstract

With the rise of Agroecology, a dynamic of participatory research is occurring that influences the reconfiguration of food attributes. The route of Agroecology at the scale of the local food system converges on high security and sovereignty in food management, which influences personal and social perception regarding sustainable food.

Key words: agroecological transition; survival strategy; participatory

Introduction

The predominant agricultural production model, whose main characteristic is hyper-technology to achieve higher crop yields, is based on the use of massive doses of inputs: fossil fuels, pesticides, fertilizers, hybrid seeds, machinery, water for irrigation and continues a long list. However, this agricultural model failed to solve the problem of hunger in the world population, because there are currently 800 million hungry people, according to the report "The state of food security and nutrition in the world 2020" (FAO 2020).

At the same time that the unsustainability of the globalized food system is denounced, it seeks to reduce its influence, support processes of resistance and propose elements to redesign food systems so that they can achieve ecological, economic and social sustainability of all their components: production, processing, distribution and consumption (Gliessman 2016), in order to provide the population with healthy food without degrading the natural resource base and at the same time addressing broader aspects of sustainable rural development such as governance, solidarity markets, access to livelihoods, family planning, management of production systems, reduction of shrinkage and waste, among others (González de Molina and Simón 2010).

The literature classifies the motivations for the consumption of ecological products into: personal good and social good (Bravo et al 2013). In the first case, the individual consumes organic foods to satisfy his or her personal needs; while, in the second he does it to support social or environmental causes. In practice, the consumption of organic products is mainly motivated by reasons of health and environmental conservation and to a lesser extent by support for local producers and well-being (Kvakkestad et al 2017).

What and how much we eat directly influences what and how much is produced, and it is necessary to encourage diets that are good for both health and the planet, as well as to send convincing messages to the consumer

(Drewnowski 2015). A radical transformation of the system is urgently needed and food is the most powerful tool to optimize the health of people and the planet (Willet et al 2019).

In fact, the feeding of human populations has gone from the collection of fresh vegetables in nature, to specialized production in large monoculture extensions, with high mechanization and use of agrochemicals; that is, from natural foods to those manipulated through different technological processes. The latter have become a few basic products, whose negative effects are well known, due to prolonged exposure over many generations to a low diversity of foods and their associated microbiota, which is why nutrition and immunity functions have been reduced naturally in the human microbiota (Vázquez 2022a).

Precisely, in the face of the crises generated by the negative externalities of modernity and its impacts on human survival, this article shares some clues that Agroecology offers to move towards sustainable food.

Attributes of sustainable eating

Regarding the acquisition and consumption of fresh agricultural products, five characteristics predominate in the personal and social behavior of the majority of the population: supply, quantity, size, appearance and access; Although, there are sectors of the population and places where they also consider that they are free of chemical substances and have nutritional value, attributes that have been promoted by organic agriculture; This agricultural production model has also contributed to the perception of the safety of raw materials and additives used in processed products. Recently, based on the experience of the pandemic caused by Covid-19, the population also considers the biosafety of livestock products, whether live animals or their products.

When deciding what food to purchase, the consumer takes four factors into account: i) the availability and real-time supply of food, which in turn depends on the presence of physical spaces where she can get it, either because she produced it herself or himself, bought them or exchanged them, ii) the purchasing power he has to buy those foods that results from the balance between the monetary income he has and the prices of foods, iii) the desire and acceptability that he feels for certain foods, which results from cultural norms, traditions, personal preferences and even effects of advertising and marketing, and iv) the assessment of the quality and safety of these foods, for which different variables are used such as color, size, the ingredients used in the food. they make up, the degree of decomposition, the possibility of contamination, etc. (HLPE 2017).

With the rise of Agroecology, as a science that offers the scientific and methodological bases to move towards sustainable food, a dynamic of participatory research is occurring that influences the reconfiguration of food attributes (Table 1); because, in addition to those related to quality, safety, nutrition and health, those that consider production and post-production processes in aspects related to social, environmental responsibility, equity and solidarity, among others, are integrated; trend that reorients the attitude in food towards the restoration and conservation of natural and social resources.

Attributes	References
Primary production	
Fresh products obtained in agroecological production systems (values on the ways in which the products are obtained)	FAO (2020)
Production systems adapted to local characteristics (landscape, biodiversity, socioeconomics, customs)	FAO/INRA (2018), Vazquez 2018)
Production system with traditional agroforestry design (semi-natural function). Synergies that promote ecological interactions	Vázquez (2922b)
Integration of traditional varieties and races	FAO/INRA (2018)
Integration of crop nutrition and health with soil improvement	FAO/INRA (2018)
Reduce, reuse, recycle waste (byproducts)	FAO (2020)
Co-responsibility implies that jobs are truly shared by men and women	Zaragoza Ayuntamiento (2019)
Obtain fresh fruits, leafy vegetables and other products around the home (semi-natural)	
Post production	
Post-production process (hauling, transportation, storage, processing, marketing) biosafety (does not carry diseases to people)	HLPE (2017)
Access to products at fairs where a diversity of farmers and products attend	Calcina <i>et al</i> (2021)
Access to local products	FAO (2020)
Responsible business relations based on dialogue, respect and transparency and solidarity	Castillo (2020)
Proximity channels. Local-regional short marketing channels (CCC). Agri-food network	De la Cruz <i>et al</i> (2017)
Co-participants. Share information, positions and opinions. Collectively shape the System	De la Cruz <i>et al</i> (2017)
Acquisition attitude	
Consumption of local products that reduces the environmental impact related to production and transportation	FAO (2020)
Buy agroecological products as a personal and social ethic (healthier than conventional ones; that is, aspects such as environmental awareness, equity, support for small producers, among others, do not seem to be incentives to opt for organic products)	Vaco <i>et al</i> (2015)
Proximity consumption is that which is based on the construction of relationships of closeness and trust between producers and consumers, on short and proximity marketing circuits, as well as on criteria related to the temporality, seasonality and freshness of food.	Zaragoza Ayuntamiento (2019)
Form and participate in networks or groups of informed, critical and responsible consumers, who assume consumption as a political citizen act.	Chaparro-Africano <i>et al</i> (2023)
The participation of the different actors involved in the local food system in the co-production of public policies, allows not only to increase the legitimacy of the policies thus created, but above all - and especially - to take advantage of and operationalize the great wealth and creativity that the exchange of points of view, needs, knowledge and social experiences present in our city; in addition to combining the action and mobilization of available public and social resources and, in general, developing efficient and operational public policies.	Zaragoza Ayuntamiento (2019)
Feeding attitude	
Fresh products free of residues of agrochemicals, toxins and other harmful substances	Chaparro-Africano <i>et al</i> (2023), FAO/INRA (2018), HLPE (2017)
Organoleptic quality (smell, color, flavor). Responsibility when purchasing and choosing more nutritious and sustainable options	Chaparro-Africano <i>et al</i> (2023), FAO (2020)
Diet containing adequate food energy, micro- and macronutrients sufficient to sustain life, support individual activities, and maintain a healthy body weight. Balanced bioavailability of nutrients.	FAO (2020), HLPE (2017), Willett <i>et al</i> (2019)
Consumption of unprocessed or minimally processed foods	FAO (2020), Vazquez (2018)
Consumption of seasonal foods	FAO (2020), Vazquez (2018)
Clean and safe drinking water as a reference drink and responsible use	FAO (2020), Vazquez (2018)
Respect for local culture, culinary practices, knowledge and consumption patterns	FAO (2020), Vazquez (2018)

Table 1: Attributes of sustainable nutrition*.

(*). Construidos desde referencias consultadas, validadas mediante intercambios sostenidos con investigadores y agricultores.

Diets include all the foods and beverages consumed by a person, while dietary habits include the quantities, proportions and combinations of different foods and beverages and the frequency of their consumption. Both are an expression of eating behaviors and respond to cultural and biophysical contexts (HLPE 2017). They directly determine the nutritional status of individuals, in such a way that healthy diets and habits are intended to satisfy the energy and nutritional needs necessary for each individual according to their age, sex, habits and activities, while avoiding practices and products generate diseases and nutritional deficiencies (FAO 2011).

Sustainable diets have low environmental impact, which contribute to food and nutritional security and healthy lives for present and future generations. They contribute to the protection and respect of biodiversity and ecosystems, are culturally acceptable, economically fair, accessible, affordable, nutritionally adequate, safe and healthy, and allow the optimization of natural and human resources (FAO 2010).

In the future, food will not only allow optimal growth and development from pregnancy and in all stages of life, but will also enhance physical and mental capacities, as well as reduce the risk of disease (Koletzko et al 1998), because billions of microorganisms inhabit the human body and influence its development, physiology, immunity, and nutrition (Bengmark 2001).

In the search for a healthy diet, the redesign of food production systems under the principles of Agroecology, facilitates the functional interactions of biodiversity that contribute to its capacity for ecological self-regulation and that of the intestinal ecosystem of the people who consume said foods (Vázquez 2022a).

Agroecological markets, as a commitment to the promotion of agroecology, are short marketing circuits that establish relationships between consumers and producers, different from those that exist in conventional markets, through the development of local models that respond to a territorial context and reduce the intermediation (Ministry of Agriculture and Livestock, Aquaculture and Fisheries of Ecuador 2015).

In Mexico, short marketing circuits for food security are based on the direct sale of fresh and seasonal products, with minimal intermediation. They are characterized by geographical proximity, the participation of family and artisanal economy units and reduction of the food value chain, creating more trust, integration and coordination to achieve the common vision and develop innovation and sustainability processes (Martínez et al 2021).

The greater distance between producers and consumers has generated a growing food disaffection, that is, a social process marked by citizen distrust towards the products offered by the system, mass-produced, standardized, anonymous, delocalized, harmful (potentially carcinogenic and allergens), such as colorants, preservatives and flavor enhancers) and toxic (with residues of antibiotics, hormones, pesticides and genetically modified organisms) (Soler and Calle 2010).

On the other hand, fair trade is the production-distribution-consumption commercial network oriented towards a supportive and sustainable development that benefits excluded or disadvantaged producers, promoting better economic, social, political, cultural, environmental and ethical conditions in this process (Cotera and Ortiz 2004). When the producer realizes that the consumer is his best ally, the value of the link becomes more virtuous (Caracciolo 2013).

In this sense, sustainable gastronomy is also promoted, as that which takes care of its essential resources, assuming responsibility for the future impacts of what we do today; including impacts on natural resources and ecosystems, as well as impacts on the values, ideals and well-being of our society in the future. It is protecting our resources today to ensure our wealth forever. It is being aware that only by taking the necessary care can we enjoy the enormous natural and cultural wealth and diversity that we are lucky to have (Buitrago and Chitiva 2024).

Without a doubt, the psycho-social nature of food invites “commensality” and exchange within the family group. It is the act that completes the cycle, in which emotional values and the maintenance of communication and family traditions are consolidated (Vázquez 2018).

In fact, healthy and sustainable eating is a dietary pattern that promotes all dimensions of people's health and well-being, with low pressure and environmental impact, accessible, affordable, safe, equitable and culturally accepted. It allows the optimal growth and development of people at all stages of their lives, both present and future generations, contributing to the prevention of malnutrition in all its forms and the reduction of the risk of suffering from non-toxic diseases. transmissible (FAO 2020).

Agroecology route for food sustainability

Currently, agroecology is considered an area of knowledge and praxis that addresses broad issues inherent to the socio-environmental complexity of the countryside, such as food security and sovereignty, decentralization of profits and the market, local self-determination, transfer of technology and elements. similar development and governance systems (Anderson et al. 2019).

In this sense, the debate on food systems has been rising from agroecology, which especially investigates markets and alternative agroecological food networks and their potential to generate transformative or transitional itineraries towards the sustainable development of societies (FAO/INRA 2018). , with small agroecological producers as main actors, who in the case of Latin America have stood out for their extensive participation in providing a good part of the commercial supply of organic products in their countries (FIBL/INFOAM 2017, Valencia et al 2019).

Eating behavior is the set of individual and household choices and decisions about what foods are acquired, stored, prepared, cooked and consumed, how, where, when and by whom, and the distribution of food in the family (according to sex, age or particular condition such as pregnancy or illness), observed through actions, habits, routines and strategies around eating at different times (Poisot 2021).

In fact, food, as a need and attitude of people, has moved in accordance with the advances and perceptions established in different eras; Of course, after World War II the change has been significant, because agricultural and livestock production intensified with high use of technical products of chemical synthesis, fossil energy and heavy machinery, complemented by industrial development for processing and production. transformation of fresh products, unleashing global supply chains that privileged the criteria of quality, flavor and presentation, establishing a conventional food culture with various negative influences.

As an alternative, organic agriculture emerged, which led to primary production and post-production with authorized technical products, incorporating the criteria of safety and proximity, whose specialized markets demanded the certification of products as organic. Organic agriculture itself evolved, under the influence of traditional peasant agriculture, permaculture and the agroecological transition, which together are influencing a new change in the perception of food, which demands participatory certification of primary production systems and post-production to consolidate sustainable food.

From this perspective, regardless of the state of sustainability of the food system, the Agroecology route proposes the need to have public policies consistent with sustainability, which are supported by decentralized agroecological knowledge management systems, as a legal framework. , theoretical and methodological that facilitates the transformation of the conventional food system and converges with the territorialization of Agroecology (Figure 1) at the scale of the local food system, which guarantees high security and sovereignty in food management and influences the perception personal and social regarding sustainable food.

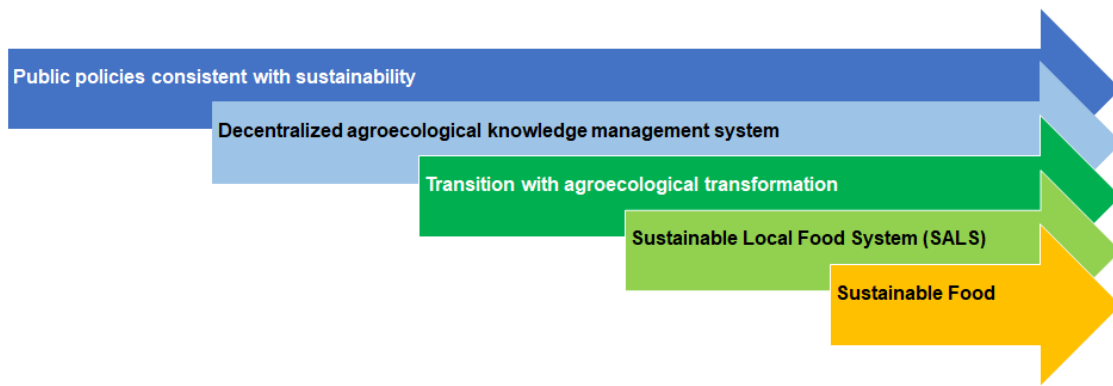


Figure 1: Agroecology Route for food sustainability. Validated in a preparation workshop for the implementation of the Agroecology Policy. Havana, January 31-February 1, 2024.

The food system can be defined as the set of socioeconomic relationships that directly affect the production and distribution processes of agri-food products, to satisfactorily fulfill the social function of food-nutrition with safe or safe foods (Malassis 1979).

In this way, it has been studied how different experiences are incubated and developed, where the improvements introduced in the processes of production and technological innovation, distribution, marketing and consumption create synergy to enhance the capacities of articulation and expansion of said networks, from a rationality. human-reproductive (Pérez 2015), as well as the importance that the transversal collaboration of producers, consumers, NGOs, academics and members of civil society has in its formation (Ferguson et al 2009).

The different agroecological marketing efforts include: fairs, stores, community baskets, restaurants, catering, and other alternative forms of marketing such as tourist educational farms and workshops, where the supply of agroecological foods is wide (Heifer 2014) and food markets. the land of the Slow Food movement (Saucedo et al 2023), among others.

Sustainable quality of life, although it is a highly complex socioeconomic challenge for health systems, can be considered one of the priorities for the survival of human populations. It is a holistic approach to health conservation, which is particularly different in urban, peri-urban and rural systems, where factors that determine the quality of the habitat, healthy eating and natural medication converge (Vázquez 2022b).

Food practices can be influenced by larger scale processes such as globalization, economic development programs and rural infrastructure, educational programs, cultural and religious processes, advertising and entertainment, or demographic processes such as urbanization and migration, to mention some. They constitute a key level to act and establish more sustainable food systems since interventions in food practices (with new information, incentives, nutritional education or dietary guidelines) allow influencing the agency of the actors as consumers and generating new eating habits that in turn perhaps reorganize the food system (HLPE 2017).

Considering the tangible and intangible assets of family farming and the territorial dynamics in which they deploy their social reproduction strategies, privileging the regional over the global, are the starting point for the construction of territorial food systems (Santos 1996).

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