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More sustainable agriculture in semi-arid conditions: experiences in the State of Ceará, Northeast Brazil

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ARTICLE SECTION

More sustainable agriculture in semi-arid conditions: experiences in the State of Ceará, Northeast Brazil

Abstract: The agroindustry promised to eradicate hunger in the world, but despite the increase in agricultural production, nearly one billion people still go hungry and on the other side one billion are overweight, with chronic diseases. The loss of soils, contamination of water and shortages, the reduction of biodiversity and social conflicts are some of the phenomena. In the search for solutions, agroecology proposes as a science principle for more sustainable agriculture, based on the ancestral knowledge of traditional and indigenous peoples. Our starting point is the hypothesis that agriculture, based on agroecological principles, is more sustainable when it is democratically constructed from the territories and practices ecological and systemic management of agro-ecosystems. The processes of agro-ecological transitions were investigated in the Northeast of Brazil, where a project supported by the European Community was carried out for five years. In this process, women and young people play an important and decisive role in the dissemination of knowledge. Participatory evaluations and observations have been carried out and progress in these processes has been identified. The possibilities of producing food in an environmentally friendly way, even under difficult conditions such as in the semi-arid region is being examined.

Key words: Agroecology, Food sovereignty, Peasant agriculture, Foodsystems

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IDEAS CLAVE / HIGHLIGHTS / IDEES CLAU

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| <ol style="list-style-type: none">1. Es posible conseguir buenos resultados con los principios agroecológicos en condiciones de semiárido.2. El método de formación de multiplicadores ha sido eficaz en la difusión de la agroecología.3. La agroecología ha empoderado a las mujeres en la actividad agrícola.4. Los jóvenes adquieren perspectivas de permanencia en el campo a través de la agroecología.5. La construcción participativa del conocimiento fortalece a los agricultores y su organización. | <ol style="list-style-type: none">1. It is possible to achieve good results with agroecological principles in semi-arid conditions.2. The method of training multipliers has been effective in disseminating agroecology.3. Agro-ecology has empowered women in agriculture.4. Young people gain prospects of staying in the countryside through agroecology.5. Participatory knowledge building strengthens farmers and their organisation. | <ol style="list-style-type: none">1. És possible aconseguir bons resultats amb els principis agroecològics en condicions de semiàrid.2. El mètode de formació de multiplicadors ha sigut eficaç en la difusió de l'agroecologia.3. L'agroecologia ha empoderat a les dones en l'activitat agrícola.4. Els joves adquireixen perspectives de permanència en el camp a través de l'agroecologia.5. La construcció participativa del coneixement enforteix als agricultors i la seua organització. |
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EXTENDED ABSTRACT¹

More than a decade ago, in 2009, the IAASTD warned in his report on agriculture, that the current model could not be sustained for much longer. One way or another, the destruction of livelihoods will require profound changes, so that “following in the same way is not an option” (IAASTD, 2008). IAASTD is an initiative of the World Bank and United Nations organizations that brought together 110 governments and convened more than 400 scientists for an evaluation. His report “Agriculture at a Crossroads” (2009) calls for a new paradigm-oriented shift in agriculture as inevitable, imperative, and urgent, with a profound transformation of the global food system from the ground up. The report records the richness of agro-ecological experiences and their enormous potential to increase production, preserve the resilience of agro-ecosystems, encourage the local economy, improve health, and ensure people’s well-being.

Agroecology is part of sustainability sciences, which play a central role in paradigmatic change, seeking solutions alongside those who need them and building scientific knowledge from real experiences in the territories. Especially in the south agroecology arises in the last decades as science, movement, and practice, considering the knowledge of the native peoples and their relationship with the earth. Agro-ecological transitions are made through a change in the scientific paradigm and the democratic construction of agri-food systems from the bottom.

In the case of Brazil, after the return to democracy in the 1980s, a multitude of agroecological initiatives and one of the most important peasant movements in Latin America emerged. With 330 million hectares of agricultural land, it is one of the most important suppliers of raw materials for agribusiness and livestock breeding. Almost five million families are involved in agricultural production. Between 1950 and 2000, almost 60 million people migrated from the countryside to the cities, especially from the northeast, which is characterized by long periods of drought and desertification.

The social movements recorded significant achievements in developing policies to promote family farming and advanced their ecological process. Between 2003 and 2016, the Government of the Workers’ Party (PT) supported the agroecological transition through different programs, lines of credit and public calls, and valued peasant agriculture as a food security base for the Brazilian population. In 2012 agroecology was declared a national policy.

Especially in the northeastern region of Brazil, characterized by droughts and poverty, thousands of agricultural families improved their quality of life, using social technologies to survive in semi-arid climates and with the production of organic food. In the territories there are hundreds of agroecological experiences that allow to identify principles of agriculture, which is hypothetically more sustainable.

The importance of women in this process was long denied, as in general their work in agriculture remains virtually invisible. In recent decades, many projects are aimed at women and their emancipation by the valorization of their agricultural work, essential for the agro-ecological transition.

The main objective is to verify whether farmers can understand and apply the principles of agroecology in ecological, social, and economic dimensions to lead to more sustainable agriculture. Other objectives are: i) show the possibilities of producing food ecologically,

¹ Traducción exclusiva de los autores / Authors’ exclusive translation.

even in difficult conditions such as semi-arid; ii) address the need to build agri-food systems from the territories, in a participatory manner; iii) demonstrate the challenges of gender issues and youth, associated with sustainable agriculture.

The data base was a research at the end of the Agroecology, Family Agriculture and Market Project (AFAM), co-financed between 2006 and 2011 by the European Community and the Konrad Adenauer Fortaleza Foundation. We present some results of the evaluation with 88 multipliers, trained by the Project. The methodology consisted of the application of questionnaires and participatory observation during the conduct of training processes, offices, and meetings with farmers. A total of 88 of the 196 trained agents responded to a questionnaire containing 92 questions, with indicators defined by a group of technicians, farmers, and partners. These indicators bring together socio-political, socio-ecological, and socio-economic dimensions of agroecology.

In the socio-political dimension, the indicators were: network participation, public policies, participation in councils, participation of young people and women, active multipliers and strengthening of associations.

In the socio-ecological dimension were the indicators: use of fire and burning, increased biodiversity, use of natural defensives, green fertilizers, soil cover, reforestation, existence of seed houses and soil correction.

The socio-economic dimension had as indicators marketing, access to government programs and organization of producers. Others were increased household income, quality of life and organic certification of products.

The AFAM, aimed at the agro-ecological transition of small farmers families in the Northeast region of Brazil, to improve quality of life and environmental preservation. Specific objectives were the strengthening of the organization and self-management of family farmers, the improvement of market access and the dissemination of appropriate and adapted technologies. To encourage the agroecology transition we apply as a central strategy the formation of multiplier agents.

The formation followed the peasant-to-peasant (PtP) method, successfully carried out by agroecological movements in Latin America. This method consists basically in the transfer of knowledge between farmers. Field visits gives the groups the opportunity to learn about the practices of their peers. In this way the exchange of practices and ideas was advancing, and we see the integration of new practices into the properties of the participants.

For five years, 442 people participated in the multiplier training courses, 302 men (68.32 %), 140 women (31.67 %) 185 young people (41.85 %). At the end 196 multiplier agents were formed to act in 39 municipalities in three regions. 88 agents were interviewed at the end of the project, 29 % of women and 26 % young people. Of the 88 agents, 97 % declared commitment to the challenge of transferring technologies and agro-ecological knowledge. 64 actors interviewed claimed to have directly mobilized 201 local farmers, even in the face of difficulties such as the lack of information, the cultural resistance to new practices or the scarcity of water for production.

84 agents declared that they stopped burning as a form of preparation of the soil for planting. 71 made soil cover, 55 diversified the products and 74 used natural defensive. 34 agents observed increased production with crop diversification. For example techniques like compost, crop rotation, application of natural defenses and consociated planting are used.

The results of the research shows that agroecology can be a catalyst for transformation. To introduce the agro-ecological principles the method of “peasant-to-peasant”, applied in the training of multiplier agents, was the decisive factor of the success. Mutual field visits with the exchange between farmers on their properties and the visit of advanced agro-ecological experiences were great incentives for the groups. The results were easier assimilation of technologies, which are often been rejected when it comes to knowledge passed by agricultural technicians from governments.

The participatory constructed knowledge improves political and economic aspects of social life, but more important is that the self-esteem of producers is strengthening them as responsible for transforming their reality, indicating the effectiveness of a transformational process from the bottom up. Specifically, for women and young people the agroecology has opened up new life prospects, with empowerment through the valorization of their agricultural production. The actions of the youth and women segments in the multiplication of agroecological knowledge were excellent. Research on the emancipation of rural women highlights the importance of social movements. Together with feminist organizations they exclaim that “without feminism there is no agroecology”.

Experiences and research prove that it is possible to produce ecologically in the semi-arid and that it is the most practicable way to live with difficult conditions. Where there are agroforestry systems there is also water and the soils become more fertile. These experiences recorded throughout the northeast effectively teach that reforestation, together with ecological crop management, creates microclimates and increases resilience, enabling cultivation at extreme temperatures, while regulating temperatures and absorbing CO₂.

There are great potentials to guarantee food sovereignty in a participatory way, when the organization of the community advances. In the end, two processes are linked in the political dimension of the agroecological transition: the struggles of movements for food sovereignty and the empowerment of people, especially women. In this sense a great contribution of agroecology is the transformation of power structures in the territories.

Agroecology offers alternatives for more sustainable agroecosystems but does not offer universal magic solutions. In the processes of the construction and dissemination of knowledge, recognizing the knowledge among the farmers themselves as subjects and protagonists the transformation can be quite efficient and lasting.

The epistemological pluralism of agroecology is a catalyst for this important change that involves peasant families in building knowledge complemented by understanding reality from experience, different from the theories invented in sterile agro-industry laboratories.

So, they are not “models” to follow, but agroecology opens up another world view that accepts its diversity and plurality, and teaches to live with dynamic, open and decentralized processes.