

Women and sustainable agriculture in Côte d'Ivoire: Challenges and perspectives

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Abstract

This article focuses on the challenges of building women's capacities to ensure sustainable agriculture in Cote d'Ivoire and the prospects for their empowerment. To achieve this objective, a literature review is carried out. The main data show that in Cote d'Ivoire, women are stakeholders in the strategies implemented for sustainable agriculture. Several actions are helping to drive a new era of gender equality in rural Ivorian areas. Conflict management, women's capacity building and the literacy policy have led to greater women's empowerment. In this set of actions, soilless cultivation is positioned as a real opportunity for women to revolutionize sustainable agriculture in Cote d'Ivoire.

Keywords: Rural women; Food production; Cultivable land; Sustainable agriculture; Ivory Coast

1 Introduction

Women and men do not enjoy equal economic opportunities. They are very dynamic economic agents, AfDB (2015). They play a major role in the agricultural economy in Africa where agriculture remains the backbone and employs 70% of the population, AfDB (2015). They constitute almost two-thirds of the agricultural labor force and produce the majority of food in Africa. However, in the agricultural sector, women have very little access to essential inputs such as land, credit, fertilizers, new technologies and extension services Bongiwe (2015). For this reason, their yields tend to be significantly lower than those of men, AfDB (2015). Those of Côte d'Ivoire are not on the margins of these realities above. They also occupy a prominent place in agricultural production and the supply of food products, Silué, (2020). But their inaccessibility to land has not allowed them to optimize the various agricultural innovations that have been implemented by the various governments of Côte d'Ivoire so that they best contribute to sustainable agriculture and food security. Youl et al. (2017). In addition, a skylight is open to them with the above-ground culture. Fighting against the lack of cultivable land and favoring a threefold increase in yields and better product quality would help them to become autonomous, Coulibaly et al. (2021). In this context, a review of the literature was carried out within the framework of the project to promote the cultivation of vegetables above ground among the women of Tiéviéssou (Grand-Lahou) in Côte d'Ivoire. This project is led by the University of Quebec at Chicoutimi in collaboration with the National Agency for Rural Development Support (ANADER). This literature review consisted in making a general documentation in order to identify certain data that would help to better conduct the said project. Our investigations focused on the following points: sustainable agriculture in Côte d'Ivoire, the food security in Côte d'Ivoire, the solutions

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implemented to ensure sustainable agriculture and food security, women, food crops and food security in Côte d'Ivoire, the involvement of women in soilless production. This article is structured in three main parts. The first part describes the problem under study. The second part presents the methodological framework of the research and the third part presents the results and the discussion.

1.1 The problem women and sustainable agriculture in Côte d'Ivoire

Throughout the world, women are subject to discriminatory practices that keep them in a situation of vulnerability. They have little access to land ownership in a continent where the majority of the population lives from agriculture. This state of affairs reduces their access to credit and their ability to undertake sustainable economic activities. Thus, the vulnerability of women is accentuated by lack of income. They hold only 18% of agricultural concessions and are not better off in the administration. What about those of Côte d'Ivoire ? UNDP (2017), Silue (2020). In Côte d'Ivoire, women are still marginalized Kone and Ibo (2009). 75% of those in rural areas live below the poverty line, which is 737 CFA francs / day and 269,075 CFA francs / year, CARE (2019). They are often deprived of basic social services. Certain socio-cultural factors perpetuate traditions that are harmful to girls and women. Despite the establishment of structures responsible for the promotion and protection of women's rights (Department of Gender Equality and Promotion, 2006, National Committee to Combat Violence Against Women and Children, year), Côte d'Ivoire is in 136th place in the gender inequality index according to the 2011 UNDP ranking, Madani and Tall (2013). But nowadays, equality between men and women is the cornerstone of sustainable development. However, what are the issues in the food sector in Côte d'Ivoire about women?

1.2 The issues of women's involvement in sustainable agriculture in Côte d'Ivoire

1.2.1 The role of women in the food chain in Côte d'Ivoire

Côte d'Ivoire derives most of its income from agricultural activities. Food insecurity is mitigated by the high production of food products. Long relegated to the background in favor of export crops such as coffee, cocoa and rubber, food products nowadays occupy a place of choice in Ivorian agriculture for achieving food self-sufficiency, Silue (2020). However, the FAO and the WHO consider that the daily consumption of vegetables should be 205 g per inhabitant and therefore the overall needs of the country for quality food would reach 18,000,000 t/year. However, vegetable production in 2016 would be 637,000 t/year. The quantity currently consumed, estimated at 920,000 t/year, is still not enough to meet needs, CIRAD (2019). Women have an essential place in Côte d'Ivoire's growth and development process World Bank (2013). They devote themselves simultaneously to the production of food crops, the processing of certain foodstuffs, in particular cassava into attiéké, and the marketing of these products, Youl et al. (2017). Among the food producers, some have organized themselves into cooperatives. The National Federation of Food Cooperative Societies of Côte d'Ivoire (FENASCOVICI) and the Cooperative for the Marketing of Food Products of Cocody (COCOVIPO) are to be cited as examples of dynamism, Silue (2020). Despite these organizations, there are professional organizations and women's associations in both urban and rural settings. Apart from these professional organizations, there are individual actresses and not the least. These women contribute greatly to food security in Côte d'Ivoire. They are represented at 90% in the food sector, Silue (2020). Food production represents more than 17.5 thousand tons per year in Côte d'Ivoire and women are at the heart of this nourishing activity which concerns essentially tubers (41% of yams with 7.1 thousand tons), roots (cassava with 5.4 thousand tons), plantain bananas (1.9 thousand tons) and cereals (7.6% of rice and 5.9% corn as well as millet and sorghum). If the national demand for human food is covered in yams, cassava, plantain bananas and maize, the country is still very dependent on the outside for certain products such as fruits and vegetables (tomatoes, eggplant peppers, etc.), rice at 21%, wheat at 100%, onions at more than 90% and potatoes at 100%, Ducroquet et al. (2017). In view of these efforts made by women, the State supports them with substantial actions.

1.2.2 Above ground production history

Soilless cultivation consists of growing plants without soil, on mineral or organic substrates, Vitre (2003). These substrates can be sand, coconut fibers, rock wool, pozzolan, clay pebbles Coulibaly et al. (2021), Fondio and N'Gbesso (2021). The origins of soilless culture are very old. According to archaeologists, this technique has existed since the 9th and 10th centuries among the Aztecs. They grew vegetables on the rafts in their partly lakeside city of Tenochtitlan, present-day Mexico City, Djaha (2015). The oldest publication on soilless culture is the book *Sylva Sylvarum* published in 1627 by Francis Bacon. In 1699, John Woodward published his water culture experiments with spearmint. In 1859-1860, the discoveries of German botanists Julius Von Sachs and Wilhelm Knop led to the development of the technique of soilless cultivation. This cultivation technique quickly became a standard in research and teaching which is still widely used and currently considered a type of hydroponics. In 1929, William Frederick Gerick Berkeley publicly promoted this crop as a solution used for agricultural production. He grew tomatoes twenty-five feet tall in mineral nutrient solutions rather than soil. He also coined the term hydroponics in 1937 for growing plants in water. One of the

first successes of hydroponics was on Wake Island where hydroponics was used to grow vegetables for passengers. In the 1960s, Allen Cooper in England developed the nutrient film technique. The Pavilion grounds at Walt Disney World's Epcot Center opened in 1982 and ranks prominently among the different types of hydroponic techniques. During the 1960s and 70s, commercial hydroponics farms were developed in Abu Dhabi, Arizona, Belgium, California, Denmark, Germany, Holland, Iran, Italy, Japan, the Russian Federation and other countries. During the 1980s, many automated and computerized hydroponic farms were established around the world. Hydroponics was introduced in Côte d'Ivoire in 2008, Koffi et al. (2021). The FAO financed, from 2011, a pilot phase for the installation of 200 hydroponic modules Fondio et al. (2017). The accompanying research for this stage is conducted by the CNRA in Bouaké. The interest of this technique is to solve the lack of cultivable land and optimize yields, Koffi et al. (2021). This technology saves space, Fondio et al. (2017). It saves a lot of time, reduces the amount of water used, the quantities of phytosanitary products and the cultivation time compared to the classic cultivation technique and other methods. It helps to improve agronomic performance while respecting a low environmental impact, (2015).

1.2.3 *The role of Ivorian women in soilless culture*

Vertical farming or soilless farming is not yet very developed in Côte d'Ivoire. Thus, the involvement of women is not yet very visible; therefore, there is little literature on this subject. Nevertheless, some sporadic actions should be noted:

- In 2008, the FAO introduced this technique in the district of Abidjan to young unemployed people and women as part of a feasibility study in which the CNRA took part with the town of Treichville.
- As part of a training program offered by the NGO "La Pierre Angulaire" and the Canadian Embassy, 40 women from the town of Niablé, located in the east of the country, acquired skills in hydroponics. .
- Work carried out by the CNRA in 2009 with the wives of the military made it possible to actually produce lettuce.
- A 1,000 m² module for the cultivation of tomatoes above ground has been installed for the Group of Hors Ground Market Gardeners of San Pedro (GMH2SP) made up of 7 people in the former agricultural city of San Pedro with the support of the National Rural Development Support Agency (ANADER).
- The "Hortivoire" project initiated by the mayor of Tiébissou in favor of the women and young people of the municipality in the techniques of agricultural production above ground, Fondio et al, (2017).

Actions in the field of soilless culture in favor of women are not legion. However, if they are accompanied in the realization of this new technology, they will give results because of their dynamism in the food sector.

1.3 **Opportunities for women in sustainable agriculture in Côte d'Ivoire**

Women are stakeholders in the agricultural sector, FAO (2010). They are defended on the international scene for access to equality with men. As such, the concept of gender helps them to reduce the disparities that existed against them, FAO (2019). In this context, FAO (2019) has adopted integrated and transformative approaches for gender equality at the international, regional, national level, but also within communities and households. To further contribute to this objective, the focus is on the following actions:

- Strengthen the capacity of States to design and implement food and agricultural policies and programs that fully take into account the skills, needs and aspirations of rural women.
- Promote responsible governance and management of productive and natural resources while strengthening women's participation in local institutions and thus facilitating their access to service delivery, etc.

In Côte d'Ivoire, the opportunities are the measures taken by the State to support women, Yatabary (2016). There has been the ratification of several conventions and sub-regional and African meetings for better coordination of actions to take into account the needs of men and women in Africa. These include in particular:

- The ratification of the MAPUTO protocol (the additional protocol to the African Charter on Human and Peoples' Rights relating to the rights of women in March 2012);
- The sub-regional conference on women in the ECOWAS Gender space;
- Collaboration with the ECOWAS Center for Gender Development;
- Regional Ministerial Conference on Women, United Nations Conference Center Addis Ababa, Ethiopia (ECA);
- The conference of women ministers of the African Union;
- AGDI: Gender and Development Index;
- Collaboration with the intergovernmental agency of la Francophonie;
- Resolution 1325, AU Heads of State Declaration on Gender Equality

- The contribution of the MAPUTO protocol on women's rights in transforming traditional gender roles in Africa: assessment, possibilities and responsibilities in July 2016, CEDAW (2018).

Following these conventions, concrete actions have been taken in favor of women.

1.4 Accompanying measures for the food sector in Côte d'Ivoire

- A ministry is dedicated to women. This is the Ministry of Family, Women and Children, which is responsible for implementing and monitoring government policy on the protection of women, families and children. .
- 277 women benefited from land certificates marking the beginning of an era of equality between men and women in rural areas.
- UN Women Côte d'Ivoire, since early 2016, has been implementing a women's economic empowerment and conflict management project. This project aims in particular to develop value chains in the North to include women's groups and thus ensure inclusive growth while building women's capacities.
- The UNDP has helped to stimulate the emergence of small productive and commercial activities among disadvantaged populations aimed at the sustainable improvement of the working and living conditions of women in particular. They constitute 80% of the direct beneficiaries of the interventions.
- In 2012, the Ivorian State strengthened the operational capacities of the Autonomous Literacy Service. The strengthening of the literacy policy has made it possible to create 152,828 Centers with a staff of 75,275 learners including 43,626 women and 31,649 men with 4,371 facilitators. These centers offer several training opportunities including sewing, nursing assistant, hairdressing etc., CEDAW (2018).

Furthermore, the Ivorian State is committed to upgrading the food sector with the Support Project for Small Savannah Producers (PPMS) from 2008 to 2012, the Support Project for the Revival of Agricultural Sectors (PARFACI) from 2013 to 2017, the Support Project for Agricultural Production and Marketing (PROPACOM OUEST) from 2014 to date and the Support Project for the Development of Cassava and Market Gardening Sectors in Côte d'Ivoire (PRO2M) from 2017 to date, Méité et al. (2018). Also, this interest is illustrated by the actions in favor of women's cooperatives, the main players in this sector. There law n° 97-721 of December 23, 1997 relating to this movement with the aim of making it more effective, more viable and much more modern. In addition, the adoption of this decree has enabled women to group together in cooperatives and revitalize their activities, Silue (2020).these aim to supervise and modernize production and market food products. With this in mind, a National Food Stock Exchange (BNV) was created in 2002 to sustain the activities. The State directs, supports and controls the activities of this sector through the creation of the Office for the marketing of food products (OCPV), signed by decree No. 84-934 of July 27, 1984, Silué (2020). He educated a Support Program for the Food Sector in Côte d'Ivoire (PASVCI), financed at approximately 113,119,140,000 FCFA by the European Union, Directory of government websites (2021).Support is also provided with banks and microfinance institutions. For example, microfinance/Oikocredit granted a loan of 1.5 million euros in 2010 to COCOVICO, Silué (2020).

Despite these opportunities, there are constraints to overcome.

1.5 Constraints experienced by women in sustainable agriculture in Côte d'Ivoire

The difficulties encountered by women can be summed up in these points, Youl et al. (2017), FAO (2015):

- Difficulties in accessing arable land.
- Low yields impacted by climate change.
- A lack of appropriate new agricultural technologies.
- The high cost and installation of above ground production equipment.
- High cost of products from above ground in relation to the high cost and maintenance of the installation
- Difficulties in accessing financing in the face of unsecured activities.
- The purchase of harvest products at a low price.
- Post-harvest losses due to lack of conservation and processing infrastructure.
- Low educational level of women.

1.6 Some solutions in sustainable agriculture in Côte d'Ivoire

- Invest in women's literacy.
- Strengthen managerial capacities by training women.
- Train women in innovative production techniques for adapting to climate change for food self-sufficiency.
- Fund more women.

- Support the proper marketing of products (avoid road hassles, remunerative selling price).
- Better promote the sale of products from this above-ground technology, CNRA (2012). To this end, a simplified device has been set up by the National Center for Agronomic Research (CNRA) in Côte d'Ivoire, Fondio et al. (2017).

2 Research methodology

A literature review was carried out in connection with the objective of our study. It consisted of a consultation of secondary data produced in the field of research, advocacy, international conferences, press reviews and scientific articles in order to perceive the involvement of women in sustainable agriculture in Côte d'Ivoire. . Our investigations focused on the role of Ivorian women in the food chain in soilless cultivation, the opportunities offered to them and the support they receive from the government and national and international partners.

3 Results and discussion

The literature review on the place of women in ensuring sustainable agriculture in Côte d'Ivoire demonstrates that women are stakeholders in the strategies implemented by the Ivorian government for sustainable development and food security, Ministry of Agriculture and Rural Development (2018). This involvement of women would be explained by an awareness of their state of vulnerability that they would like to share and improve. Also, this is perhaps linked to the strong government will to better respond to their needs in agricultural programs over the past ten years such as the Agricultural Production and Marketing Support Project (PROPACOM OUEST) from 2014 to this day and the Support Project for the Development of Cassava and Market Gardening Sectors in Côte d'Ivoire (PRO2M) from 2017 to date, supported by the international community which requires percentages of women in funded programs and projects Aletheia et al. (2020), Méité et al. (2018). In addition, they would like to show their ability to contribute to food security by creating cooperatives for the production and marketing of Silué food crops (2020). To this end, for a population of 29,389,150 inhabitants, women represent 47.8%, RGPH (2021). They are a significant segment of the population and very active in many areas, CDEAO (2019). They represent about 67% of the agricultural labor force and provide 60 to 80% of food production, Inades-Formation (2018). They are both agents of change and engines of resilience. Yet there is a huge gap between women and men in food and agriculture AfDB (2015). This gap is due, according to Hillenkamp (2010) and PRONAT (2010), to the prejudices of customs and customs according to which the biological characteristics which would distinguish women and men have led to an immutable division of labor over time and invariable over time. space. In Côte d'Ivoire, support measures have been put in place to help women get out of their vulnerability, one of which particularly targets the agricultural sector, specifically the food sector, Ministry of Agriculture and Rural Development (2018). Partners have made commitments to help women face their vulnerability. These are the actions of FAO, UNDP, WFP, the World Bank, UN Women (2017), Madani and Tall (2013). Some have organized themselves into formal or informal cooperatives or groups according to government guidelines to be better supported and benefit from certain services such as loans, donations, Silué (2020). Specifically, the food crop sector because they are more involved in it due to their inaccessibility to cultivable land Youl et al.

4 Conclusion

The literature review allowed us to have data concerning the involvement of women in sustainable agriculture in Côte d'Ivoire. They are more dynamic in the food sector.

Their state of vulnerability persists in the face of the difficulties they encounter despite the support measures that have been put in place to help them. For a contribution, in perspective, a project of the University of Chicoutimi wishes to support the women of Tiéviéssou Pi (Grand-Lahou) in the promotion of the cultivation of vegetables above ground for their empowerment. This project will help solve the problem of access to cultivable land and to cover the population's fruit and vegetable needs, which in 2016 was estimated at 283,000 tons t/year. May this project be realized for the happiness of the women of Tiéviéssou Pi of Grand-Lahou and the sustainable development of Côte d'Ivoire and the world.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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