CDA
BAYERO UNIVERSITY KANO

PROCEEDINGS

OF THE

5th International Conference on Drylands

Theme: *Promoting Sustainability and Resilience of Rangelands: Present and Future Outlooks*

6TH TO 8TH MAY 2025

Edited by

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CENTRE FOR DRYLAND AGRICULTURE

Bayero University, Kano

Proceedings
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5th International Conference on Drylands

6th – 8th May, 2025

Organised by

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ISSN: 2476-8650

Citation: Bello, M.M., Shaibu, A.S., and Salisu, A.T. (2025). Promoting Sustainability and Resilience of Rangelands: Present and Future Outlooks," *Proceedings of the 5th International Conference on Drylands*, Centre for Dryland Agriculture, Bayero University Kano, Nigeria, 6th to 8th May 2025.

Proceedings of the 5th International Conference on Drylands
A Publication of the Centre for Dryland Agriculture, Bayero University, Kano
May, 6th – 8th 2025

It is Better to Procure Food from the Field than the Market: Youth Perspectives and Engagement in Agri-Food Systems in Mali and Nigeria

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Abstract

Youth engagement in agri-food systems (AFS) is crucial for sustainable food production, economic stability, and rural development. This study examines the perspectives of young people in the drylands of Mali and Nigeria regarding their participation in agriculture, focusing on aspirations, challenges, and opportunities within AFS. A key finding is the growing recognition among youth that investing in agriculture—through labor, inputs, and capacity building—ensures reliable food supplies and economic resilience, reducing dependence on market purchases. A study conducted across six regions in Mali and Nigeria explored these dynamics using a mixed-methods approach, incorporating surveys and interviews with 1,224 respondents, evenly split by gender. The findings reveal remarked opportunities and constraints influencing youth participation in agriculture. Notably, young women have greater access to credit and financial support (21.04%) compared to young men (9.70%), largely due to women-targeted financial schemes. While both genders benefit from AFS employment opportunities, female youth appear to have an advantage in financial inclusion. However, structural barriers remain significant, with limited access or user rights to land, agricultural equipment, credit and low technological adoption being key challenges affecting youth participation. The study underscores the need for targeted policies and investments that support youth engagement in agriculture, promote innovation, and strengthen local food systems. Addressing gender disparities and structural constraints through inclusive financial mechanisms, land access reforms, and technology-driven solutions can enhance youth participation and drive agricultural transformation in the study country and by extension to most parts of West and Central Africa (WCA). By building the capacities of youth – both female and male youth, enhancing their agency to make strategic choices and fostering an enabling environment, governments and development partners can harness the potential of young people to build resilient and sustainable food systems

Keywords: Youth engagement, Agri-food systems, Gender disparities, Economic resilience, Drylands

Introduction

Africa has the youngest population globally with 60-70% under 30 years old (Yami and al., 2019). In WCA, countries like Mali and Nigeria showcase the potential of youth to drive AFS. Currently, 32% of Mali's population (7.17 millions) and 30.6% of Nigeria's population (67 millions) are aged 15 to 35, forming a critical economic force. By 2050, youth will continue to dominate, with Nigeria's population projected to reach, 400 million 60% under 35 (UNFPA,

2023; Hoover Institution, 2024), and Mali's exceeding 40 million, with 15-20% 15-25 years. These demographics provide both opportunities and challenges for sustainable development.

Despite opportunities for youth in the agri-food transformation in the drylands of Mali and Nigeria, barriers such as limited access to land, markets, and credit, along with inadequate financial support, hinder full engagement. These challenges often frame youth as a "bulge" linked to unemployment and underemployment (Honwana & de Boeck, 2005; Urdal, 2006). Youth in rural Mali and Nigeria are demonstrating significant innovation and resilience by organizing collective actions, engaging in food processing, and capitalizing on local market opportunities such as aggregation, commercialization of produce, and supplying agricultural inputs. Initiatives led by young women in food processing and the production of nontraditional crops challenge the stereotype of African youth as uninterested in agriculture (White, 2012).

This statement in the title of this study reflects the perspective of a young Malian man in his thirties who decided to return to his village to farm alongside his aging father after earning a technical diploma in accounting. Upon his return, he actively produced and commercialized improved sorghum varieties, including hybrids. His journey highlights the critical role of youth in revitalizing agri-food systems (AFS) and underscores the potential of agricultural investments to drive the sustainability of local food systems and growth. As the head of his family's /household's farming operations, he fully embraced his late father's reflection/belief that it is better to buy food in the field than from the market. This highlights the importance of prioritizing investments in agriculture such as labor, inputs and capacity building- over-reliance on purchasing food from the market. Adopting hybrid crop production demonstrated that investing in agriculture leads to reliable food supplies and surplus food.

His insights provide valuable context for understanding the types of involvement and aspirations of young people/youth in the AFS of West and Central Africa (WCA), specifically focusing on Mali and Nigeria. They also highlight a positive shift in the mindset of Malian youth, who increasingly view agriculture as a viable pathway to financial/economic independence and a critical step towards achieving adulthood and autonomy.

However, these youth face substantial barriers, including limited access to land and credit, lack of support for agricultural enterprises, insufficient technical expertise, and exclusion from decision-making processes (Proctor & Lucchesi, 2012). Addressing these challenges is critical for transforming agriculture into a viable career path for youth, offering opportunities for income generation, skill development, and social advancement (Muñoz et al., 2013).

Agri-Food systems (AFS) are essential for food security, nutrition, and economic growth in Mali and Nigeria, which face climate change and socio-political challenges. However, youth struggle to find stable livelihoods due to limited economic opportunities and a stagnant job market. A study mapping role of youth in the agri-food value chain identified opportunities for self-sustaining employment and business development. Combining these opportunities with technical and entrepreneurial training could significantly improve food security, nutrition, and youth employment (Ripoll et al., 2017). The objective of this study was to explore the opportunities and challenges faced by youth in the agri-food systems of Mali and Nigeria. It aimed to understand the factors shaping youth engagement and aspirations in the agricultural sector.

Methodology

A study conducted across six regions in Mali and Nigeria explored key opportunities and constraints within the agri-food systems, with a focus on youth aged 15 to 35. The research employed a mixed-methods approach, incorporating surveys and interviews with 1,224 respondents, evenly distributed between male and female participants.

Study locations

The study was conducted across six regions, three each in Mali and Nigeria. In Mali, the regions included Kayes, Koulikoro and Sikasso. These are former administrative regions of Mali.

Kayes is the first administrative region of Mali, covers 119,743 km² and has an estimated population of 3,200,061 (INSTAT, 2023). Its population represents 14.28 % of the population of Mali. Its economy is driven by agriculture, livestock and gold mining. Kayes is one of the most groundnut-producing regions in Mali. It is crossed by the Senegal river which is one of the most important rivers in West Africa. The southern districts of Kita and Kenieba possess abundant

land and water resources that support agricultural activities. However, the youth are increasingly drawn to gold mining and international migration, which compete with agriculture.

The region of Koulikoro, located in Central-West Mali spans 90,120 km^2 with a population of 3,238,899 inhabitants (INSTAT, 2023). The region is characterized by cereal, grain legume and cotton cropping and livestock. The land is a critical resource for both agricultural and non-agricultural purposes.

Sikasso known as Mali's food basket occupies 70,280 km² representing about 5.7 percent of Mali's total land area. With a population of 4, 273,984 (INSTAT, 2023) is the wettest region in Mali, enabling diverse agricultural activities, including off-season farming. In districts like Yanfolila, water resources and advanced techniques allow groundnut production twice annually though gold mining attracts youth.

In Nigeria, the study was conducted in the states of North-Eastern northern parts, including Bauchi, Gombe and Kanu states. Kano State is the most populous state in Nigeria with an estimated population of 13 million inhabitants (NBS, 2016). It covers an area of about 21,000 Square kilometers. The economy of Kano State is predominantly agriculture, where more than 75% of the rural population is engaged in food crop production and animal raising (Barau, 2007). Kano state undoubtedly possesses an abundance of land and water resources that support agricultural production in the state as well as some solid minerals.

Concerning Gombe State, it is one of the 36 administrative states of Nigeria and is located at the North-Eastern part of Nigeria. The Gombe State has a land area of 18,768 km^2 area, ranking 21st of the 36 states of Nigeria. The Gombe State has a population of 2,353,000 persons, according to the 2006 population census (NPC, 2006), ranking the 33rd of the 36 States of Nigeria. The Majority of the State's population are engaged in Agricultural activities such as farming and rearing of animals.

Lastly, the Bauchi State occupies a total land area of 49,119 km² representing about 5.3 percent of Nigeria's total land mass. In 2017, the population of Bauchi was estimated to be close to 7.3 million. The Bauchi state is characterized by two distinct vegetation zones, namely, the Sudan savannah and the Sahel savannah. The former can be found in the southern part suitable for

agricultural production and widely considered agriculturally rich. The Sahel savanna (also referred to as semi-desert vegetation) stretches from the middle of Bauchi as one moves to the north, characterized by stands of thorny shrubs.

Sampling and Data Collection

A mixed methods approach was applied, including surveys, focus group discussions (FGDs), and Key Informant Interviews (KIIs). The study employed a multi-stage approach to select 1,224 respondents (606 males and 618 females aged from 15 to 35 years) engaged in the agri-food value chain across six regions The detailed definition of youth is given in the appendix-1.

The sampling procedure for the study followed a multi-stage approach. In the first stage, twelve districts or local government areas (LGAs) were purposively selected from the six regions based on the extent of youth engagement in various segments of the agri-food value chain. In the second stage, two villages or communities were purposively chosen from each district/LGA. This selection considered several factors, including the rural versus peri-urban status of the village, market participation, agro-ecological characteristics, the dynamics of youth enterprises, and socio-cultural factors. In the third stage, approximately 50 respondents were randomly selected from each of the chosen villages/communities. Care was taken to ensure gender parity, with an equal representation of young men and women aged 15–35 years (Table 1).

The selection of communities (villages) was guided by several criteria beyond the agri-food segments engaged by youth. Key factors included the rural versus peri-urban or urban status of the villages, their level of remoteness or accessibility, and their participation in markets. Additional considerations included the presence of dynamic processing activities, youth attitudes toward enterprise, the agroecological characteristics of the area, land-use dynamics between elders and youth, prevailing livelihoods, and socio-cultural characteristics. These criteria ensured a diverse representation of communities reflecting the varied contexts in which youth participate in agri-food systems.

Data sources

The study utilized multiple data sources to capture comprehensive insights into youth engagement in agri-food systems. Individual surveys were conducted to collect socio-demographic data and explore youth participation in agri-food value chains, along with their opportunities, constraints, and aspirations. Focus Group Discussions (FGDs) were guided by a structured discussion framework tailored to specific agri-food value chain segments. Topics included youth agency, challenges, coping strategies, and aspirations. Each sex-disaggregated FGD consisted of at least 8 participants, with an equal representation of men and women. FGD sessions were conducted separately for men and women to encourage open dialogue. In total, 30 FGDs were carried out across the study locations. In addition, 15 Key Informant Interviews (KIIs) were conducted with knowledgeable community leaders to gain deeper insights into local agri-food systems and the roles and experiences of youth within these systems.

Data analysis methods

Quantitative data were analyzed using descriptive statistics (frequencies and measures of central tendency) to describe respondent characteristics and agri-food businesses. Qualitative data from FGDs and KIIs were analyzed using qualitative content analysis (Krippendorff, 1980; Miles, Huberman & Saldana, 1994). Thematic areas were extracted, and results were presented in tables and graphs to illustrate findings.

Results and Discussion

The study explores the demographics of youth engaged in AFS in Mali and Nigeria, focusing on factors such as gender (Figure 1), age, household headship, marital status, educational attainment, and youth occupation (Table 1). The findings highlight both the similarities and differences between the two countries regarding these demographic characteristics and provide insight into the role of youth in the agricultural sector.

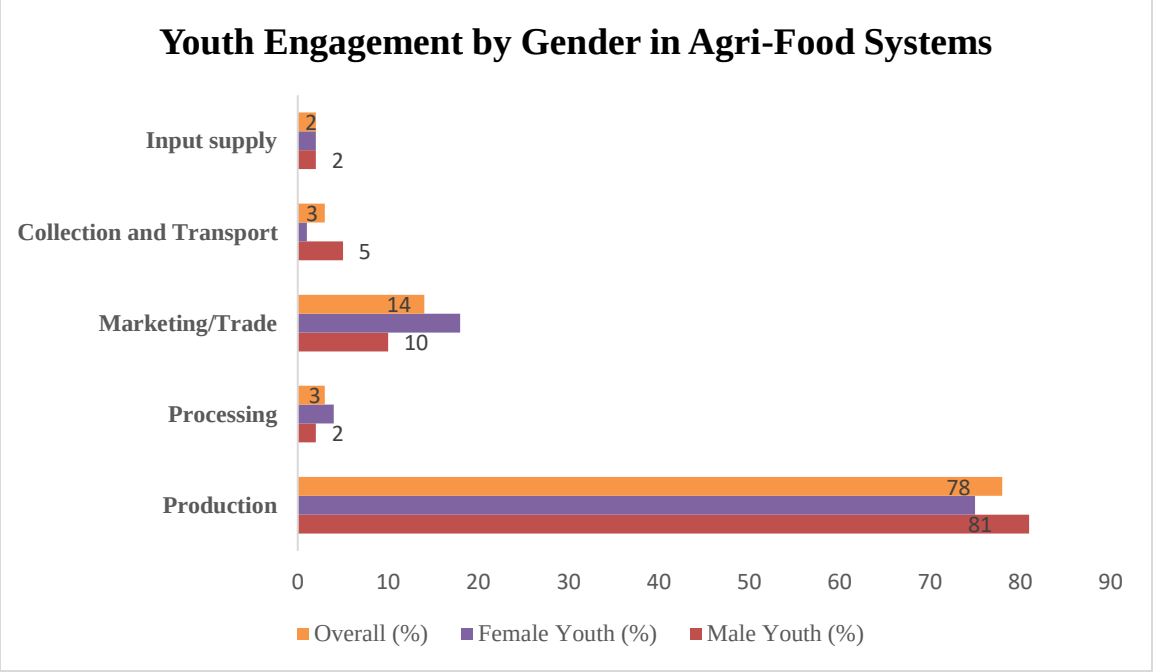

Figure 1: Youth engagement by gender in Agri-Food Systems
Source: Field research in Mali and Nigeria (2019-2021).

Demographics

The gender distribution of youth entrepreneurs in Mali and Nigeria showed a balanced representation. In Mali, women represented 50.35% of the youth entrepreneurs surveyed, while men accounted for 49.64%. Similarly, in Nigeria, women slightly outnumbered men, making up 50.66% of the youth entrepreneurs, compared to 49.33% for men. This trend indicates a positive development in women's participation in rural entrepreneurship, particularly in traditionally male-dominated agricultural sectors. However, the difference is minimal (less than 1%) in both countries, suggesting a relatively balanced representation across genders, though with a slight edge for women.

The respondents' mean age across both study countries was 26.05 years, indicating that most of the youth engaged in agrifood systems are within the economically productive age range. In Mali, the average age of male youth entrepreneurs was 24.74 years, while in Nigeria, it was slightly higher at 25.85 years. Female youth in Mali had an average age of 27.61 years, compared to 26.44 years in Nigeria.

Table 11: Sociodemographic and socioeconomic characteristics of youth in AFS in Mali and Nigeria

	Male Youth	**Female youth**	**Total**
Sample size by study country			
Mali	49.64	50.36	56.94
Nigeria	49.34	50.66	43.10
Total	49.51	50.49	100.00
Age mean (years)	**26.02**	**26.08**	**26.05**
Mali	24.74	27.61	26.17
Nigeria	25.85	26.44	26.14
Age category segmentation			
Middle-aged adults (25-35 years)	50.41	49.59	40.03
Emerging adults (15-24 years)	48.91	51.09	59.96
Business age			
Overall mean (# years)	7.83	6.82	7.30 (diff. 1.01)
Std. dev.	4.74	4.54	4.66
Mali	7.37	6.90	7.13
Nigeria	8.44	6.72	7.58
Marital status			
Mali			
Married	49.71	88.03	68.87
Non-married	50.29	11.97	31.13
Nigeria			
Married	58.92	69.20	64.06
Non-married	41.08	30.08	35.94
Overall			
Married	39.73	60.27)	66.42
Non-married	68.86	31.14	33.58
Household headship			
Mali	19.65	3.13	11.33
Nigeria	52.23	4.91	28.84
Overall	34.32	3.72	18.87
Education			
Educated	88.94	69.42	79.08
Non-educated	11.06	30.58	20.92
Engagement in agri-food value chain segments (%)			
Crop production	80.69	74.60	77.65
Trade	10.07	18.12	14.10
Processing	2.30	4.53	3.41
Aggregation and transport	5.12	0.81	2.96
Input supply and servicing	1.82	1.94	1.87
Status of crops production (%)			
Pearl millet	26.90	9.72	18.23
Sorghum	24.59	9.89	17.17

Groundnut	30.20	57.70	44.07
Cowpea	20.30	14.89	17.57
Rice	24.92	22.85	23.88
Vegetables	12.54	46.85	29.69
Tubers and roots	3.30	3.34	3.27
Fruits	0.66	0.00	0.33
Seasonal revenues (USD) generated by crops production by youth gender			
Pearl millet	385	91	238
Sorghum	102	47	74.50
Groundnut	237	177	207
Cowpea	179	90	134.50
Rice	177	129	153
Vegetables	125	96	110.50
Total crop production revenues per season	1205	630	917.50
Youth-based opportunities in Agrifood systems			
Full employment	35.91	38.68	37.29
Access to inputs	19.50	15.51	17.50
Increasing labor market	16.50	14.08	15.29
Training support program	10.39	9.65	10.02
Credit and financial support	9.70	21.04	15.37
Others	8.00	1.04	4.52
Youth based constraints in Agrifood systems			
Limited access to land	72.00	51.00	61.50
Limited access to equipment	10.50	40.50	25.50
Limited access to credit	10.60	2.50	9.25
low level of technology adoption	1.50	6.50	3.75
Youth aspirations			
Start own business	79.93	90.40	85.23
Work for public sector	8.33	3.97	6.12
Work for private sector	6.80	4.80	5.79
Pursuing education	3.91	0.66	2.27
Going to migration	1.02	0.17	0.59

Source: Field research in Mali and Nigeria (2019-2021).

These variations in age could be influenced by local cultural practices, which might shape the timing of marriage and family responsibilities, affecting the entry into entrepreneurial activities. Notably, the average age of youth entrepreneurs in both countries underscores the significant role that youth play in the agricultural sector, as this age group is not only at the peak of their productivity but also represents a potential workforce for expanding agricultural production in the region.

Household headship among youth varied significantly between the two countries, with more males taking on headship roles in Nigeria than in Mali. In Nigeria, 52.23% of male youth were household heads, compared to only 19.65% in Mali. This difference may be attributed to the socio-cultural norms in Nigeria, where males tend to assume headship roles at a younger age, particularly after marriage. On the other hand, in Mali, while many young people marry early, they often continue to live with their parents, and adult men remain the household heads. This difference highlights the varying family dynamics and gender roles in both countries. The proportion of female youth household heads was low in both countries, with only 4.91% of female youth in Mali and slightly higher in Nigeria, where 5% of female youth were household heads.

Regarding marital status, the study found stark contrast between the two countries. In Mali, 88% of female youth were married, compared to only 50% of male youth. This disparity suggests that young women in Mali tend to marry at a much earlier age than their male counterparts, possibly due to the cultural expectation for girls to marry early. In contrast, in Nigeria, 69% of female youth and 59% of male youth were married. The higher rate of early marriage among young women in Mali could be linked to the more traditional norms that encourage early marriage, particularly in rural and Muslim communities.

Educational attainment was relatively high among the youth surveyed, with 88.94% of male youth and 69.42% of female youth across the two countries having completed basic, secondary, or tertiary education. This suggests that education plays a critical role in shaping the future of rural youth in Mali and Nigeria, providing them with the necessary skills and knowledge to engage in agriculture and entrepreneurial ventures. However, gender differences in educational attainment were also evident, with a higher proportion of males than females having completed formal education. This gender gap in education is particularly notable in rural areas, where girls often face barriers to completing their education due to cultural practices, early marriage, and household responsibilities.

"My family's main activity is farming. Until I was 14, it was the only income-generating activity I knew best. But I couldn't do it independently because I wasn't married. In our community, an unmarried girl has no access to seeds or farmland. This is why young girls go off to work in the

cities as domestic workers to earn an income. For example, I spent about 5 years in Bamako like domestic worker. The money I saved was used to buy kitchen utensils, clothes and everything else a girl needs for marriage. After my marriage, I started farming independently. I grow okra and groundnuts in the rainy season and vegetables in the dry season. I can say that the event that most affected my life was my dropping out of school. My career prospects are poor because of this."

- (KII, Youth female, Djeguenina, Mali).

In terms of youth occupation, the mean age of youth involvement in agriculture and Agri-Food systems was 7.30 years, with male youth having a longer history in business ventures than their female counterparts. Male youth in Mali had an average of 7.37 years in business, while female youth had an average of 6.9 years. This difference may reflect the challenges women face in accessing resources and establishing their businesses, including the burden of household chores and social restrictions. In Nigeria, male youth businesses had an average age of 8.44 years, indicating a longer duration of entrepreneurial activity compared to Mali. Female youth businesses in Nigeria had an average age of 6.72 years, which is a more significant difference than in Mali. These findings suggest that while male youth have more stable businesses, female youth face more challenges in setting up and sustaining their enterprises, particularly due to limited access to family production factors and social constraints.

Youth Engagement in Agri-Food Systems

The youth in Mali and Nigeria are actively engaging in agri-food systems, leveraging the region's natural resources such as arable land and water. As the agri-food sector remains the largest employer in these countries, it plays a critical role in addressing youth unemployment and poverty, as highlighted by FAO, CTA, and IFAD (2014), and Filmer and Fox (2014). The youth's participation in agriculture, particularly crop production, stands as the most common activity, with 78% of youth in both countries involved in this segment.

Despite facing limited access to capital and external business opportunities, the youth in these regions often choose crop production as a means of livelihood. This finding contradicts earlier assumptions that rural youth avoid agriculture due to environmental degradation, reduced land

availability, and economic pressures (Leavy and Smith, 2010; Muhammad, 2009). Increasing unemployment rates, socio-political crises, and rural migration have prompted youth to recognize the agricultural sector as a viable path to economic and social advancement. As governments and development organizations create new opportunities, young people are turning to agriculture as a steppingstone toward emancipation and adulthood.

Crop Production

Crop diversification is an essential strategy for addressing crop failure and ensuring food security at the household level. Youth in Mali and Nigeria cultivate a range of crops, including staples like pearl millet, groundnut, sorghum, rice, cowpea, maize, and vegetables, which serve both as food and cash crops (Figure 1).

Groundnut: Groundnut is a key crop in both Mali and Nigeria, with a significant proportion of youth engaged in its cultivation, particularly during the lean and rainy seasons. Groundnut production is particularly important in southern Mali, where irrigation techniques and early-maturity varieties are utilized. This crop is also crucial for income generation, especially for young women, making it one of the most profitable crops for them. Both male and female youth exhibit clear rationality in their choice of varieties, with men preferring high-yielding, early varieties for off-season production, while women opt for intermediate-cycle varieties due to logistical challenges related to drying techniques.

Vegetables: Vegetable farming is the second most important crop production activity among youth in Mali and Nigeria. The study found that a higher proportion of female youth (47%) engage in vegetable production compared to male youth (13%). Market gardening has become a key source of income for young women, with support from development projects that equip them with modern irrigation systems and access to quality seeds. For young men, vegetable production in peri-urban areas is driven by market demand and income opportunities.

Rice: Rice is the third most important crop for youth, with 24% of respondents involved in its production. Young women are more engaged in lowland rice production, while young men focus on rainfed rice. Access to irrigation systems has enabled both genders to establish land

management systems that allow women to participate in rice cultivation during the rainy season while men engage in off-season vegetable and tuber production.

Pearl Millet: While pearl millet is the fourth most important crop for youth in Mali and Nigeria, it is predominantly produced by young men (around three times more than women). Men's involvement in millet production is driven by market demand, while women's involvement is more limited and typically occurs within mixed-crop fields, such as groundnut or cowpea fields. Despite women's minimal direct involvement in millet production, they play significant roles in post-harvest activities. Millet production by young men is largely directed toward family consumption and local markets, making it a key income source for young men in the region.

Agricultural Inputs

Though youth are engaged in input supply and servicing, those involved are typically school dropouts or graduates working on behalf of cooperatives or associations. These roles are a vital part of the agri-food systems but are less prominent compared to other segments like crop production or marketing.

Youth involvement in food processing, particularly among young women, plays a crucial role in the agri-food system. This activity, which includes groundnut butter processing and seed processing, provides additional income sources and contributes to food security. Young women dominate food processing, followed by cereal production, as their main contributions to the agri-food value chain.

Marketing

The marketing sector, particularly in the food trade, has witnessed higher engagement among female youth, who represent 18% of those involved in agri-food marketing, compared to 10% of male youth. Many young women, particularly in Mali, have embraced the marketing of processed products, such as peanut paste, which generates more income than raw goods. As one young female entrepreneur from Mali expressed, the sale of processed products has allowed her to build financial independence. While women face socio-cultural restrictions on mobility and

access to land, they increasingly find opportunities in small-scale food trade, thereby enhancing their agency within the constraints of traditional gender roles.

In contrast, male youth are more involved in aggregation and transport, especially in regions like Sikasso, where agri-food markets are well-developed. They have capitalized on the advent of tricycles (called *Katakataninw* in local language) to transport produce, creating a business that supports the wider market in Bamako and Abidjan. Despite these trends, artisanal processing remains a largely female-dominated activity. This segment of the agri-food value chain allows young women to avoid competing directly with men's production of staple crops while also providing an income-generating opportunity.

The findings underscore that young women in Mali and Nigeria are more likely to engage in processing and marketing (Figure 2), reflecting gendered pathways within the agricultural sector. While both genders contribute to crop production, young women are carving out spaces in non-production areas like processing, which offers them avenues for increased autonomy and agency. These gendered trends have implications for initiatives aimed at revitalizing agriculture in the region. The reliance on traditional processing methods highlights a need for government-led programs that introduce modern techniques to boost efficiency and competitiveness in food processing.

Figure 2: Traditional system of food processing in Northern Nigeria
Photo credit: R. Babayo, September 2019.

Income from crop production

Income generation potential plays a significant role in determining the crop production choices of young people (Figure 3). The higher the revenue generated by a crop, the more likely it is to be chosen by youth. The study reveals that groundnut and rice are high-revenue crops for female youth, while male youth tend to generate more income from pearl millet and groundnut cultivation. These gendered preferences in crop choice align with the economic potential of these crops as well as cultural norms that influence access to resources.

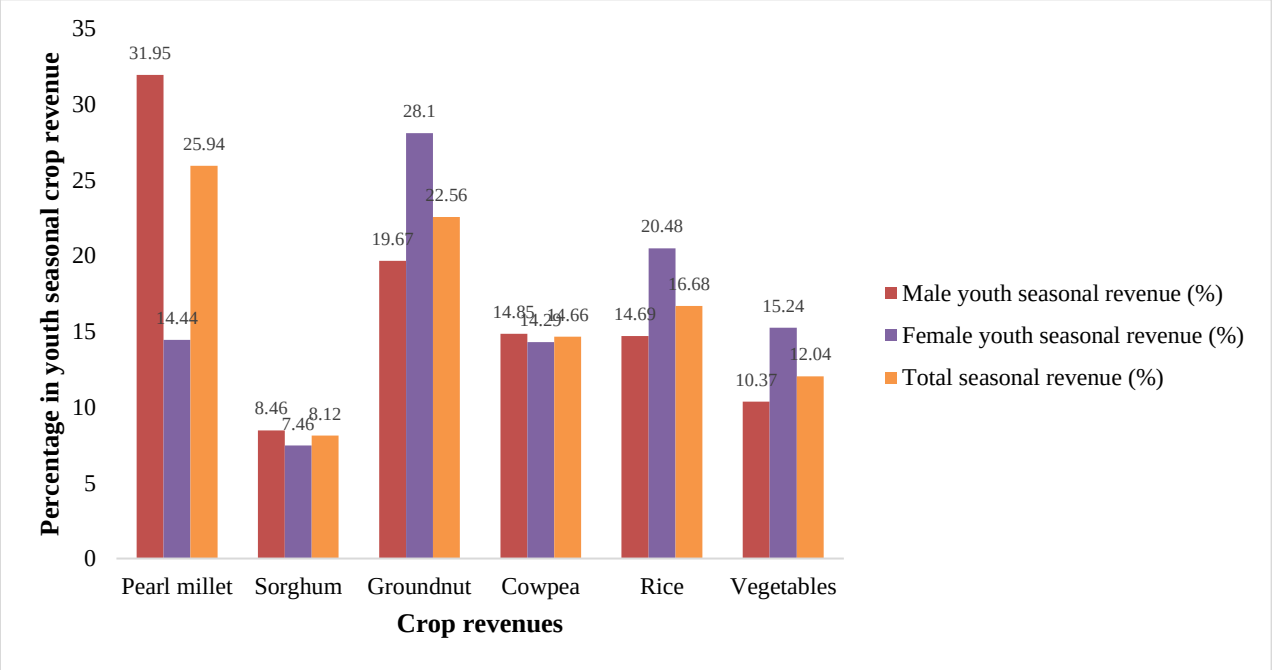

Figure 3 : Seasonal Crop Revenue Distribution by gender
Source: Field research in Mali and Nigeria (2019-2021).

In both Mali and Nigeria, the crops that generate the most revenue for youth are pearl millet (26%), groundnut (23%), rice (17%), and vegetables (12%). Specifically, male youth earn the highest revenues from pearl millet (32%), groundnut (about 20%), and cowpea (14%), while female youth generate more income from groundnut (28%), rice (20%), and vegetables (15%). These differences reflect not only the economic potential of these crops but also cultural norms and gendered access to resources.

In Mali, lowland rice and vegetable production are highly gendered, with young women leveraging these norms to enhance their economic standing within their communities. One female rice grower explained, "The production of rice allows us to reinforce our relationships with men, because both men and women benefit from rice cultivation." (KII, female young rice grower, Mali).

Interestingly, despite being one of the most widely grown crops across the six study regions, sorghum does not generate significant income for young people. While some youth grow sorghum, its primary purpose is household consumption, and its production primarily serves to sustain households during lean periods or economic downturns.

The average income from agricultural production for youth was found to be $917.50 USD per season, which is 2.23% higher than the GDP per capita of Mali ($897) but 76.67% lower than Nigeria's GDP per capita in 2023 ($1,621) (World Bank, 2023).

Opportunities for Youth in AFS

Despite some challenges, significant prospects exist for youth within the agrifood systems (AFS) in Mali and Nigeria. To foster a vibrant agrifood sector that drives rural economic growth, it is essential to enable youth to fully explore these opportunities, empowering them to become self-reliant and maximize productivity in agriculture. Figure 3 illustrates the key opportunities identified by youth in both countries, which could enhance productivity within the youth agricultural sector.

A considerable proportion of respondents in both Mali and Nigeria recognized that AFS offers a potential avenue for youth to secure full-time employment, with 36% of male youth and 39% of female youth expressing this view (Figure 4). Given the high levels of youth unemployment in both countries, AFS provides a hopeful opportunity for youth to engage in agriculture as a primary source of employment, leading to improved livelihoods, poverty reduction, and job creation.

Additional opportunities identified within the agrifood systems include increased access to agricultural inputs (17.50%), expanded labor markets (15.29%), and the availability of training

programs (10.02%) focused on modern crop production and social innovations. Well-organized, farmer-based groups contribute to these innovations. Furthermore, 15.37% of respondents highlighted the availability of credit and financial support, provided by governments, NGOs, and other stakeholders.

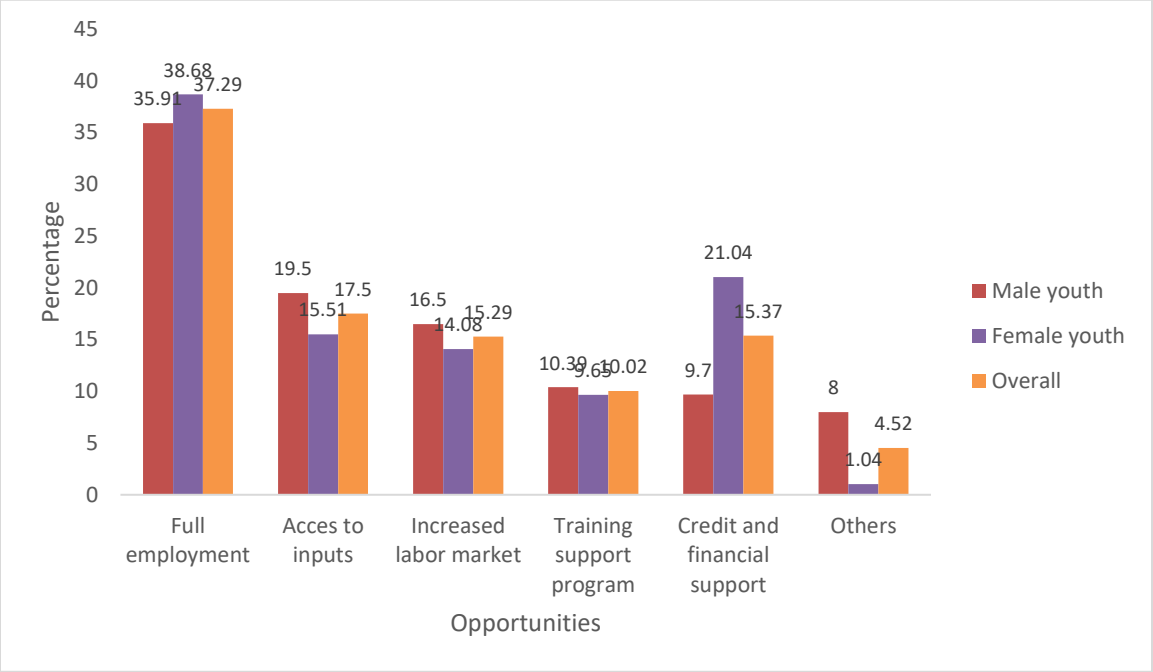

Figure 4: Major opportunities in AFS by gender
Source: Field research in Mali and Nigeria (2019-2021).

From a gender perspective, the study found that young women have easier access to credit and financial support (21.04%) compared to their male counterparts (9.70%). This disparity can be attributed to the significant efforts by NGOs to provide financial training and credit access to women, particularly through women-targeted schemes such as the *Tèkèreninw* model in Mali, which operates through village savings and loan associations. Similarly, in Nigeria, the establishment of over 700 microfinance institutions in 2008 facilitated access to credit, especially for women (Obamuyi, 2009; Madichie & Nkamnebe, 2010). In conclusion, while both genders benefit from AFS employment opportunities, female youth appear to have greater access to financial support programs due to the availability of women-targeted financial schemes.

Constraints

While opportunities in AFS are abundant, youth face several constraints in fully leveraging these prospects. Key barriers identified by youth include limited access to land, agricultural equipment, credit, and low technological adoption, as depicted in Figure 5.

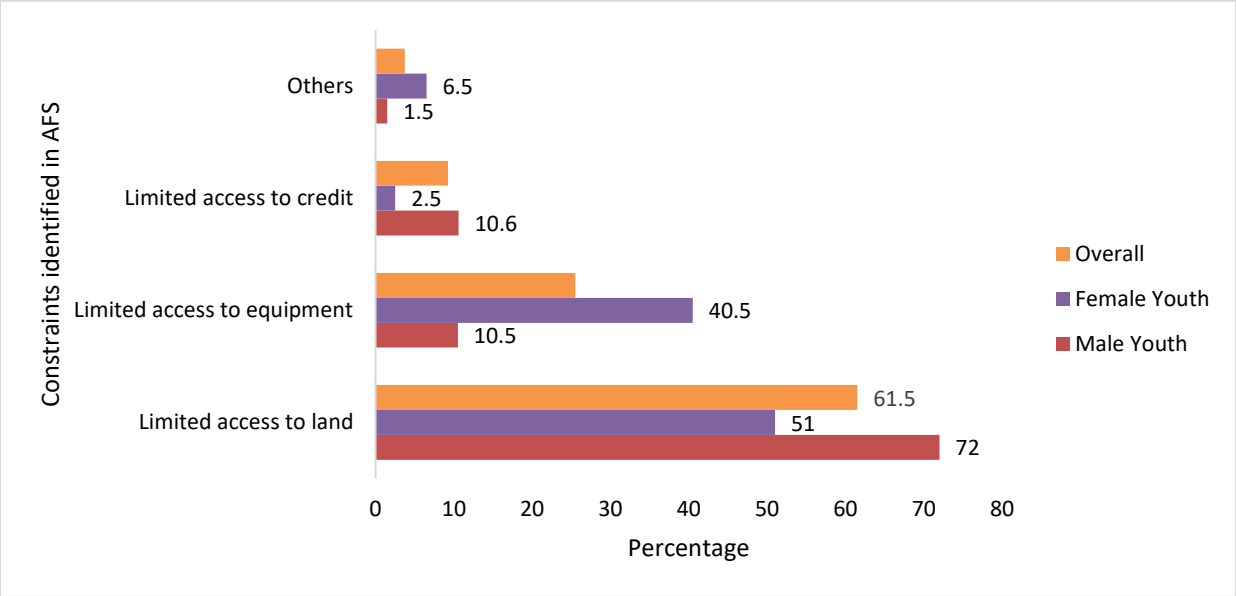

Figure 5: Youth major constraints in agri-food systems by gender
Source: Field research in Mali and Nigeria (2019-2021).

Both male and female youth face challenges in accessing land, but young women face greater difficulties obtaining agricultural equipment. In contrast, male youth encounter more obstacles in accessing credit, primarily due to insufficient exposure to financial programs. These gendered constraints are influenced by socio-cultural norms, where women often rely on collective production methods, which restrict their access to individual land ownership and equipment.

Youth Career Aspirations

Examining the career aspirations of youth in Mali and Nigeria offers insights into their long-term engagement with the agrifood sector and the sustainability of agrifood systems. Career aspirations are crucial as they directly impact the livelihood of individuals. The study identified five key career aspirations: starting their own business, working in the public sector, working in the private sector, pursuing higher education, and migrating abroad (Figure 6).

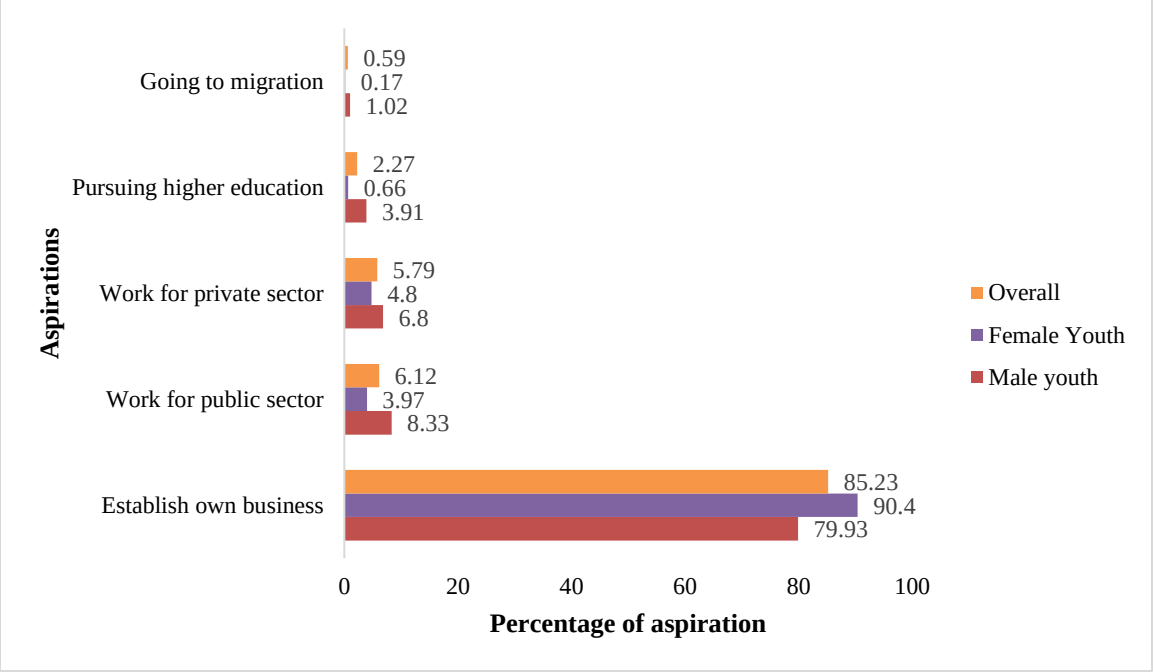

Figure 6: Career aspirations of youth
Source: Field research in Mali and Nigeria (2019-2021).

The desire to start their own business was the most common career aspiration, with 85% of youth in both countries expressing this goal. This highlights a widespread desire among youth for financial independence, with many aspiring to engage in agri-food-related entrepreneurship. Notably, a higher proportion of female youth (90.40%) expressed an interest in starting their own business, compared to 80% of male youth. Across the study locations, many female respondents also expressed a greater interest in agricultural processing as a business segment, underscoring the gendered dimensions of entrepreneurial aspirations in the agrifood sector.

These findings align with the high levels of youth unemployment in Mali (29.8%) and Nigeria (41%) (ILO, 2023; AfDB, 2024), as entrepreneurship presents a promising avenue for job creation. The low interest in government/public sector employment (6.12%) reflects the difficulty in securing public-sector jobs, which are limited by a neoliberal governmental focus on self-employment and private-sector growth. Conversely, only 5.79% of youth aspired to work in the private sector, further emphasizing the preference for entrepreneurship.

While many youth expressed a desire to pursue higher education (Salami, 2008; Muhammad, 2012), fewer indicated a clear intent to pursue advanced academic degrees such as Bachelor's,

Master's, or PhD programs. This discrepancy highlights the practical career goals of youth, with many opting for self-employment over academic pursuits.

Finally, migration as a career aspiration was expressed by a very small proportion of youth (0.59%), likely influenced by recent migrant losses in the Mediterranean, campaigns against irregular migration, and restrictive EU border controls, which have discouraged risky migration paths. Consequently, youth in Mali and Nigeria are increasingly turning toward local opportunities for self-fulfillment.

Pathway to Transformation

The study highlights the essential role of youth engagement in the transformation of agri-food systems (Table 2) in Mali and Nigeria. To fully harness the potential of youth in the agri-food sector, it is crucial to address key barriers such as limited access to land, agricultural equipment, and credit. Additionally, expanding opportunities in high-potential segments, particularly in processing and marketing, can significantly enhance youth participation and economic outcomes. Policy interventions focused on these areas can foster greater youth involvement, providing sustainable pathways for job creation, poverty reduction, and economic growth within the agri-food systems of both countries. Strategic actions aimed at removing these constraints and promoting opportunities will be pivotal in ensuring the long-term success of youth-driven transformation in the sector.

Conclusion and Policy Recommendations

Agriculture forms the most viable sector particularly in terms of its employment potential, especially for the majority of the youth in LMIC countries. It forms the foundation for the development of stable human communities and contributes much to the rural economy as well as ensuring food security at the household level and generating revenues. Thus, agrifoods are strategically positioned to have a high multiplier and linkage effect on Mali and Nigeria’s quest for socioeconomic and industrial development. Challenges such as limited access to land, limited access to equipment, limited access to credit, and low level of technology adoption, are gradually pushing the youth from the agricultural lucrative venture, which seeks to improve their livelihood.

Table 2: Strategies for sustaining Youth Engagement in Agri-food systems

Policy Support	Targeted investments and policy initiatives can help strengthen the youth capabilities in agrifood systems, addressing infrastructure gaps and providing the necessary resources and support **Enhancing access to resources**: Policies should prioritize equitable access to land and credit, especially for youth, who face systemic barriers. **Strengthen Training and Support Programs**: Make training programs more youth-oriented and accessible to promote entrepreneurship.
Technology Adoption	Introducing appropriate technologies and innovations can modernize traditional processing methods, improving efficiency, product quality, and market competitiveness. **Leveraging High-revenue Crops**: Encourage youth to engage in crops with higher economic returns, such as groundnut, rice, and vegetables.
Value Chain Linkages	Strengthening linkages across the millet, groundnut, vegetable and rice value chains, from production to distribution, can create a more robust and sustainable processing ecosystem. Investing in processing and commercialization that have high potential to expand female agency in the AFS.
Market Expansion	Exploring new market opportunities, both domestic and international, can help unlock the full potential of the millet processing industry and its diverse product range. Expanding youth agency with a particular focus on sectors like processing and marketing where young women can have more opportunities.

Although the employment opportunities available continue to increase for young people in agrifood systems, socio-cultural and structural factors prevent many young people from getting involved in food production as a career field. Thus, the impetus for developing a stream of research on youth aspirations is the observation that young Africans are reluctant to pursue an agriculture-based livelihood, which may have implications for continent-wide initiatives to revitalize the agriculture sector.

The particular youth collective actions, particularly female youth in Mali, form a platform for linkages between youth groups and microfinance institutions. Access to credit can be enhanced among youth groups by encouraging them to strengthen informal savings groups and associations aimed at mobilizing financial resources to meet the needs of members to finance their agri-food ventures.

Youth have embraced food production, marketing, processing, and input supply seen as the gendered pathways and opportunities in agriculture. Crop production was observed to be the major agri-food segment among other segments where the majority of the youth were actively engaged. Pearl millet, groundnut, rice and vegetables are mostly produced by youths due to their high generating revenues. To make crop production more vibrant and attractive to the youth, the policymakers of Mali and Nigeria should put in place policy measures aimed at targeting youth in agriculture. Like the case of Mali, where the PROCEJ program has been rolled out to get some youth into agriculture through the provision of subsidized agricultural inputs for crop production, this same module can be replicated in Nigeria targeting the youth through the activities planned in Nigeria National youth policy aiming at enhancing youth development and participation in the context of sustainable development. However, the use of rudimentary farm equipment for crop production was also high among these youth, thus limiting their area under production. The policymakers should also place heavy subsidies on farm implements and machinery to encourage the youth to enter into commercial farming since the study area presented a great potential for agricultural productivity given the needed human resource base.

Processing was also observed to be an agri-food segment the majority of the female youth were engaged in but with the use of food processing artisanal methods. Special training programs on food processing should be instituted by the governments targeting the use of modern processing methods and business managerial skills. Stakeholder engagement should be very crucial at this stage to ensure that different processing methods targeting a wide range of consumers are introduced to the beneficiary groups.

The study reflects on youth in agrifood systems across WCA seeks to contribute to a more nuanced understanding of the roles that young people can play in transforming agriculture into a more vibrant, resilient, and youth-centered sector. With a focus on both production and value-

addition processes, the study explored how youth aspirations align with available opportunities and will seek ways to support them in overcoming challenges, thereby laying the groundwork for an agricultural sector that is responsive to the needs and potential of youth in Africa.

Results from the analysis of youth aspirations revealed majority of the youth wanted to start their own business after completing school, and a high participation in agricultural production. Unfortunately, a low proportion of them were observed to be inadequately prepared to start their own business. As a result of this, youth entrepreneurial programs, rural artisanship programs and apprenticeship programs aimed at equipping these youth in the short run should be instituted across study locations and beyond. This training should be targeted at youth who are educated as well as the uneducated ones, where startup capital should be given to enable them to establish their own business after the training. Policy road maps should be developed by governments through the Ministries of Youth, Agriculture and Employment to put in place a strategic document targeted at youth empowerment in the long run, which will see a lot of youth actively engaging in their own business to reduce youth unemployment to the barest minimum.

In conclusion, harnessing youth's potential, when understood as a strategic approach, can be a powerful means of driving socioeconomic, political, and cultural development within households, communities, and on a regional and national scale.

Acknowledgments

This research was supported by Cgiar Research Program on Grain Legumes and Dryland Cereals. We extend our gratitude to youths and youth organizations for their valuable contributions and support throughout the study. The authors also extend their gratitude to the enumerators for their efforts in collecting data from youth entrepreneurs in Mali and Nigeria. We also sincerely appreciate the valuable insights and information provided by the youth who contributed significantly to this study.

Competing Interests

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Ethical Consent

The studies were conducted following the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Data availability

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

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