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"Tete Wo Bi Ka, Tete Wo Bi kyere" – The Past Has Something to Say, The Past Has Something to Show: Ghanaian Indigenous Farmers' Practices as a Research Methodology

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Abstract. The importance of research in advancing human progress cannot be overstated. Research has resulted in many discoveries for curing diseases, developing innovations, identifying and implementing social and environmental policies, and developing tools and equipment to make life easier, among other achievements. Ironically, research has also served as a tool for colonizing and dehumanizing Indigenous and racialized people across the globe. Consequently, Smith (2012) described the term *research* as the dirtiest word in the Indigenous vocabulary. Realizing the importance of research in human development, how can we do research differently in Indigenous communities? How can we make research beneficial to Indigenous communities and to researchers alike? How do we approach Indigenous communities to engage in research? This article sought to address these and other questions in the context of the research approach I adopted and the outcomes of a study conducted in different farming communities in the Northern Region of Ghana.

Keywords: Indigenous, Environment, Development, Colonization, Methodology.

Introduction

The preface of this article's title "Tete Wo Bi Ka, Tete Wo Bi Kyere" comes from an Akan language of the people of southern Ghana popularly known as Fante. It is translated as "the past has something to say and the past has something to show the present generation." This statement is a testament to how the Akan people value their African Indigenous knowledge and practices and their relevance in contemporary times. However, we are gradually losing these Indigenous knowledges and practices due to the prioritization of Western knowledge and practices in schools and research practices. Research is a process of investigation to add to existing knowledge, yet it is not neutral; after all, are we expected to believe in Western epistemologies? Despite being value-laden, research is important in every society. Research has contributed significantly to human progress since the medieval period through general sciences (i.e., both Indigenous and Western Sciences) specifically in the areas of medicine, social stratification, architecture, pharmacology, community development, agriculture, and farming to mention but a few. I delineate agriculture and farming deliberately because of the difference between the two. Agriculture is the business of growing crops or rearing farm animals and includes aquaculture (i.e., the rearing of aquatic animals such as fish) to make a living. Farming, on the other hand, is the art of growing crops or rearing farm animals for sustenance. Hence, agriculture is driven by the profit motive championed by neoliberal agricultural policies (Castellanet & Diepart, 2015; Weis, 2021).

Research has led to many discoveries for curing diseases, developing innovations, modern architecture, identifying and implementing social and environmental policies, and developing tools and equipment to make life easy etcetera. Ironically, research has also served as a tool for colonizing and dehumanizing Indigenous and racialized people across the globe (Gobena et al., 2023; Smith, 2012). Consequently, Smith (2012) described the term *research* as "one of the dirtiest words" in the Indigenous vocabulary (p. 1). In recent times, however, the strength and development of every nation depend on its research output and how the research findings are implemented. A growing body of literature champions implementation science focusing on practicalizing research findings to transform societies (Boulton et al., 2020; Guastaferro & Collins, 2021).

Despite its enormous contribution to human development, research is an expensive endeavour because of the need for logistics, time, skills, and resources to accomplish it. Consequently, high-income countries mostly from the Euro-America sub-region and Asian countries such as Japan, China, and South Korea hugely invest in research. Their investment is producing results in terms of improving the living conditions and life expectancy of their citizens. However, due to inadequate research infrastructure and financial constraints, developing countries struggle to conduct research relevant to their people, which is largely attributed to such countries' dependence on foreign agencies and organizations for support.

These funding agencies, predominantly from the Global North, dictate the term of reference of most research. Hence, research in developing countries must meet the objective, vision, and mission of the funding organization, which may or may not align with the priorities of the receiving countries. Furthermore, foreign research agencies that conduct research in Africa and other developing countries indirectly introduce neo-colonization through the back door and subjugate Indigenous knowledge in these countries.

The importance of research was demonstrated during the emergence of COVID-19, which created a competition to find a cure. Countries with a strong research pedigree such as the United States, and the United Kingdom were the first to develop internationally recognized vaccines. Later China, Russia, and other countries also developed vaccines that were used locally before exporting some to low-income countries. People were amazed at the unprecedented short period in which the vaccines were developed, casting doubt on their efficacy and the possible unknown side effects. The explanation to assuage the doubts and concerns of the public was that the vaccines were modifications of the ongoing research into vaccines, hence, the vaccines were not a fluke. This explanation further created doubts (and conspiracy theories) among some people who questioned whether the pandemic was humanly induced to reward pharmaceutical industries for their scientific research. The debate surrounding the vaccines and hesitancy to receive the vaccines persists.

Nonetheless, what became obvious during the pandemic is how the countries with vaccines and PPE hoard their resources and allow countries in the Global South to struggle to acquire them. These protectionist policies led some people—including Melinda French Gates (the former wife of global magnate Bill Gates)—to predict doom for African countries. However, a divine selection favoured countries in Africa to be among the countries with the lowest number of COVID-19 cases and deaths. That said, there are a couple of lessons that we can learn from the COVID-19 pandemic: countries in the Global South (particularly in Africa) need to strengthen their research institutions using both approved scientific and Indigenous knowledges in anticipation of future pandemics since COVID-19 is not the first pandemic on record and is very unlikely to be the last. Second, countries in the Global South should reduce their reliance on Western countries for direction in terms of research and innovation. Instead, they should strive to develop local knowledge using local materials and resources that are readily available in their jurisdictions.

Realizing the importance of research in human development, how can we do research differently in Indigenous communities? How can we make research beneficial to Indigenous communities and to researchers alike? How do we approach Indigenous communities to engage in research? This article addresses some of these questions. In it, I describe the research approach I adopted and the outcomes of conducting a study in different farming communities in NRG. The next section discusses the coloniality of research.

Coloniality of Research in Indigenous Communities

Various Indigenous communities live amidst the relics of research. Foucault (1980) argued that knowledge production is about power and domination: Societies that dominate or control knowledge production assert their dominance and control over others. Foucault's takes on power, however, is dialectic in the sense that he does not consider power as entirely bad. Power enables us to accomplish things; therefore, if power is used responsibly, it enables society to progress. Still, there is a saying that power corrupts and absolute power corrupts absolutely. Throughout history, there have been numerous occasions where the power of knowledge production or research has been used to marginalize, dehumanize, and colonize Indigenous and racialized people.

Research has been misused to perpetrate atrocities and injustices in Indigenous communities across the globe (MacDonald et al., 2014; Smith, 2012). Mosby (2013) detailed how Indigenous children in six residential schools in Canada were subjected to clandestine nutritional studies without the consent of their parents, which resulted in malnutrition, anemia and death of several Indigenous children. We can also cite here the United States Public Health study of the natural history of syphilis among Black men in Tuskegee (Alabama), which continued for a long time after the discovery of penicillin (MacDonald et al. 2014). European colonization in turn orchestrated the use of research to justify the colonization of Indigenous and racialized people by utilizing skewed or fabricated research, religion, and exploration to dehumanize and marginalize the Indigenous population (Ocheni & Nwankwo, 2012; Smith, 2012). In the context of this article, the process involves the subjugation of African knowledge and considering African people incapable of producing valid knowledge (Alokwu, 2015: Kaya & Seleti, 2013). African Indigenous knowledges and cultural practices were discredited, and some were criminalized for opposing Western "civilization."

Researchers and explorers played key roles in justifying European colonization, displacement, and oppression of Indigenous and racialized people. These so-called experts used biased interpretations of cultural practices, societal structures, and physical attributes to present Indigenous communities as inferior or uncivilized. Such misinterpretations were used as justification for the exploitation of resources, forced labour, and perpetuation of violence against Indigenous Africans. Ironically, the same experts appropriated African Indigenous knowledges in the field of environment, farming, and medicinal plants—along with social and cultural knowledges—and repackaged them as discoveries and presented them to African people. Furthermore, there is criticism against the appropriation and patenting of Indigenous medicinal plants and lives by Western pharmaceutical industries and scientists across the world (Das, 2020; Mgbeoji, 2001). This shows the aggressive pursuit of the commodification of Indigenous knowledges and lives, which many critical scholars have challenged over the years. For example, the concept of social Darwinism

was utilized to frame Europeans as the dominant race as a natural outcome of superior evolution development, thus implying that Indigenous communities were destined to be subjugated. Research findings were selectively presented, applied or manipulated to buttress the claim of European superiority, creating a veneer of legitimacy for the injustices being committed. Again, the imposition of the colonial education system and appropriated religious beliefs led to the denigration of African Indigenous knowledges. The colonial education system created a loss of identity, autonomy, and division among Indigenous people of Africans and globally.

In recent days, there has been a check on the brutality of research in Indigenous and racialized communities since the creation of research ethics boards to supervise researchers from further committing atrocities. Consequently, efforts are being made to prevent the (re)occurrence of historical wrongs and promote a more accurate understanding of Indigenous cultures and histories and the humane treatment of research participants. As part of the development of these efforts, collaborative and respectful research methodologies that involve Indigenous communities are being prioritized to eliminate the harmful legacies of past research practices. What is clear from the above discussion is that research is not a neutral tool for adjudication. Hence, it is incumbent upon researchers to identify their subjective positions and avoid the false assumption of neutrality. This will enable readers to assess research findings based on the subjective position of the researcher.

Indigenous Research Methodological Approach Adopted in the Northern Region of Ghana

This section highlights the Indigenous research methodology I adopted in conducting my doctoral research in Ghana from 2017 to 2019. It aims to help people interested in conducting research in the Northern Region of Ghana (NRG) to take a clue from my experiences. My doctoral research examined the Indigenous food systems and cultural knowledge in promoting environmental sustainability education and development in Ghana. As one of its objectives, the study examined the impact of climate change on Indigenous food systems in Ghana and how Indigenous farming knowledge could be incorporated into the school curriculum in the Ghana Education Service. The study began between March to June 2017 and followed up from February to March 2019. As part of the study, I visited six communities in NRG. In all, I (as the primary investigator) conducted three workshops and three focus group discussions and interviewed 26 smallholder farmers (comprising 12 females and 14 males). All the ethics protocols were followed. For instance, informed consent was sought, and the researcher explained to participants their right to anonymity, their right to stop the interview at any time without repercussion, and their right to choose the place of the interview. Due to the diversity of languages spoken in NRG and as part of Indigenous research practices, the researcher went to

each community with an Agricultural Extension Agent (AEA) who had close relationships with the people. The AEAs contacted a key informant in each of the communities visited, who in turn pre-informed the community of our arrival date and time. The Northern region is composed of Indigenous communities; hence, every action is dictated by the culture of the people. Therefore, a researcher needs to interact with people through the appropriate channels using an indigene of the community—an intermediary well-versed in the culture of the people. The next section briefly describes the community entry process.

Community Entry Process

Because NRG encompasses Indigenous communities, the researcher ensured Indigenous protocols were followed. Indigenous protocols in the communities were identified with the help of AEAs, key informants, and community leaders. The researcher's ability to speak four Ghanaian languages (which include the local spoken languages of the research locations) was considered an asset to ensure effective communication, trust, and social identification among respondents. The researcher first contacted the District Department of Agriculture and presented the necessary documents—an introductory letter, ethics approval, questionnaires, and interview guides—to the appropriate officials. After carefully reviewing the various documents submitted, AEAs were assigned to guide the researcher through the communities in districts. The AEAs assisted the researcher in selecting multiple communities based on their familiarity with the terrain to draw a sample from the population of smallholder farmers. The communities were pre-informed by a key informant about the date and time of the workshop, interviews, and focus group discussions. Furthermore, the communities were pre-informed that the interactions during the workshop and interviews would be audio recorded.

Before each interview, a consent form was presented and read to community members gathered for the workshop and those who agreed to be interviewed. Copies of the consent forms were given to those who could read, which asked them to append their signature if they agreed to participate in the workshop. Verbal consent was obtained from those who opted for verbal consent. In all the communities, the research team (i.e., principal investigator, AEA, and key informant person) first consulted opinion leaders who further contacted potential participants to discuss the time and date for actual interviews and workshops. On the day of the interview, the research team went to the communities by first going to the opinion leaders who in turn called out the participants who had agreed to partake in the interview and workshop. In two out of three villages where workshops were organized in the NRG, the research team met local chiefs to ask permission to conduct the workshops. The research team went straight to the chief's compound, where people had gathered for the workshops. In one of the communities, the opinion leaders took the research team to the chief's palace to greet and inform the chief of our mission.

As customs demanded, we removed our shoes in front of the palace and entered. We knelt and greeted the chief, led by the local leaders. The chief started talking in Dagbani, and we all responded *naaa, naaa, naaa*—a response to greetings in Dagbani. The chief asked our mission in the community, and we explained to him about the research and workshop we were about to conduct in the community. The chief explained to us the reason for asking about our mission despite his knowledge of our intended visits. According to the chief, it is a tradition, first to ask strangers about their mission to the palace to give them protection if they are in danger. After our brief interaction with the chief, we joined the community members gathered in front of the chief palace for the workshop. In another community, we were offered a cola nut following the tradition of the people. We split the cola nut and took a bite to signify our respect for community practices. All the focus groups and workshops conducted in the NRG commenced with an opening Islamic prayer since Islam is the dominant religion in the region. The researcher donated money to aid the community projects at the end of each workshop or focus group. Each meeting ended with a vote of thanks by the community members.

Outcome of Community Engagement with Indigenous Farmers

Community engagement and interaction with smallholder farmers in NRG through workshops and focus group discussions encouraged the farmers to disclose their Indigenous practices and the challenges facing them. These engagements using Indigenous protocols and research methods helped the researcher build good relations and rapport with the local farmers. The good rapport enabled the participants to speak freely with the researcher. It enabled two-way learning, whereby the smallholder farmers shared their knowledge of food and their local environment while the researcher shared findings of his previous studies on the role of African Indigenous food crops in combating chronic non-communicable diseases (e.g., hypertension, obesity, cancer, diabetes, cardiovascular disease) with the community members. The data generated out of these interactions were analyzed. Two major themes that emerged from the data are overreliance and misuse of agrochemicals and the extinction of Indigenous crops and farming practices. These themes are discussed below.

Over-reliance on and Misuse of Agrochemicals

This section is a follow-up to Demi (2019) and Demi and Sicchia (2021). The study found that the majority of the farmers were moving away from Indigenous low-input farming to the use of agrochemicals. The increased use of agrochemicals compromises environmental sustainability as most farmers lack Western education; consequently, are unable to read instructions on how to apply agrochemicals and abide by products' safety precautions. This finding corroborates those of earlier studies (Anang & Amikuzuno, 2015; Demi, 2019; Demi and Sicchia, 2021; Dzobo, 2016; Mattah et al., 2015; Ntow et al., 2006) which discovered that the majority

of vegetable farmers in Ghana used pesticides to control pests and diseases on their respective farms. Farmers in developing countries rely heavily on herbicides to control weeds and address labour constraints (Boafo & Lyons, 2023; Dinham, 2003) and to meet export demand (Boafo & Lyons, 2023; Racke et al., 1997). Anang and Amikuzuno (2015), however, discovered that factors including farm size, farm income, mechanization, extension contact, distance to the source of pesticide, and production system influence the decision of farmers in NRG to use agrochemicals. Although farmers realized the devasting effects of agrochemical use, they still felt helpless and vulnerable to the consequences of cultivating crops without using agrochemicals.

The study suggests farmers are gradually abandoning Indigenous methods of soil management practices on which they depended for centuries. Ultimately, farmers have experienced the negative effects of agrochemicals and desire to quit. The sentiment expressed by the participants represents the persistent theme across most of the interviews conducted in the NRG. Several farmers categorically expressed that they could not produce food without the use of agrochemicals: “Here we have no choice, we have no option, is the fertilizer that we have been using because I don’t have the energy to carry the manure to the farm” (Fuseina). The majority of the participants corroborated Fuseina’s assertion arguing that if they farm without agrochemicals, they will experience total crop failure.

However, Fuseina’s quote suggests farm manure can help address some of the crisis, even though she indicated their options are limited. Lack of strength to convey organic manure to the farm and scarcity of organic manure contribute to over-dependency on agrochemicals (Demi & Sicchia, 2021). These assertions by the participants indicate a cultural shift among smallholder farmers toward agricultural intensification at the expense of Indigenous farming practices.

However, interaction with a faculty member at the University for Development Studies, Tamale, shows disappointment and frustration within that segment of the academic community about the excessive use of agrochemicals in study areas like the NRG. The faculty member asked me critical questions that caused me to reflect on the practices and responses of the farmers. He queried: Does your work look at agrochemical use among smallholder farmers? Did the farmers tell you they use agrochemicals? Can they read and write? If they cannot read and write, how are they able to apply the agrochemical per the recommendation? Although the study was not designed to address agrochemical usage among smallholder farmers, the critical questions posed by the faculty member encouraged the researcher to pay attention to the concerns. After all, one of the merits of qualitative research is its flexibility to amend the focus of the study (Maxwell, 2012; Rahman, 2017). Farmers agreed in principle with the senior faculty member’s assertion by pointing out their limitations in comprehending the safety precautions of some of the chemicals they used. For instance, farmers

were amazed to hear that some of the chemicals they used (including DDT and ammonium sulphate) are banned substances due to their toxicity or increased soil acidity. Their amazement was captured in Demi and Sicchia (2021, p.5):

> It is so annoying that you [Westerners], you know this thing is not good, you banned it, you don't use it, and you know very well that when you come to this side of the country a lot of us have no formal education, we can't read, we can't write, we will not be able to know that this particular chemical is banned; so now, where are they putting us? Are they not going to kill us? (WS3)

The quote above demonstrates most farmers use agrochemicals without a sound understanding of the health and environmental implications. The senior faculty member contends that farmers are motivated to use agrochemicals by NGOs who are fronting for agrochemical companies. He argued that there are organic methods of controlling crop pests and diseases, but farmers have abandoned their Indigenous practices and instead concentrated on using agrochemicals. This was captured in Demi and Sicchia (2021, p.6):

> There are organic ways of pest control which are very effective, but farmers are not using because some of the NGOs just want to push the sale of agrochemicals. They use huge sums of money for advertisements convincing farmers to use agrochemicals. … There are some chemicals that when you spray or apply to crops you must wait for some months before you can consume. How will the farmers get to know this information when they cannot read and write? In a serious country, even the chemicals they use to store maize or crops after the four months, somebody must go there and analyze to determine the residual effects, but nobody is doing that. (SF, IdI)

The issues raised in the above quote are not misplaced. Another faculty member agreed with his senior colleague about the way activities of NGOs are making farmers and their soil addicted to agrochemicals: "We have propagated the use of chemicals such that farmers don't want to go back to traditional means of farming. … If you look at our Indigenous way of farming, like the use of compost manure or green manuring, that is the best." The frustrations of these academics are well placed because their claims were confirmed by farmers during one-on-one interviews and focus group discussions. My interaction with the farmers and community members indicates NGOs present themselves as saviours to the farmers and many of their practices provide immediate benefits, which easily convince farmers (Demi & Sicchia, 2021). However, NGOs failed to divulge to farmers the long-term effects of some of their practices, especially the use of fertilizers. The case is unique in Ghana where the government of Ghana

recognizes NGOs as development partners in its policy document (Ministry of Food and Agriculture [MoFA], 2016); hence, this has empowered them to operate without thorough scrutiny. There is a proliferation of NGOs in NRG and the majority failed to submit their budget for scrutiny (Avea et al, 2016; Demi & Sicchia, 2021; Osei, 2017). Although some of the activities of NGOs provide relief to farmers, they eventually undermine Indigenous food systems, contribute to the extinction of Indigenous food crops, and create long-term havoc to farming communities.

Extinction of Indigenous Crops and Farming Practices

The five northern regions in Ghana have been the custodians of Indigenous food crops including millet, sorghum, African rice, yam, and other grain legumes and nuts since their cultivation ceased in Southern Ghana in the mid-20th century (den Hartog, 1972). However, interaction with farmers in the North revealed many Indigenous food crops are going extinct. Farmers contended that the short duration of rainfall hindered the cultivation of Indigenous crops that mature late. Many Indigenous cereals take between 4 to 6 months to reach maturity, which means the flowering period coincides with drought and causes crop failure. Consequently, farmers are shifting from both Indigenous food crops and Indigenous farming practices. Participants in the community workshop reveal:

> My concern is that even some of us who are quite young, we met some of these Indigenous crops and if you look at this community, we were good in producing some particular variety of yam, and millet. There is another one we call yellow yam and those days you could make the yam mound and you plant the yam and you will get that yellow yam from it. At the same time, you could plant pigeon peas [Cajanos cajan] around the mounds but now if you do all these things it will not work. The yam seed after harvest when you go and put it down, it will rot, and we don't have any knowledge as to what to do to be able to maintain all these things. So, because we are there and because we don't have a solution to these problems, we ignore it. So, we are sure these are practically some of the issues that have led to some of these Indigenous crops diminishing small, small. (WS1)

Farmers cited unfavourable weather conditions as the main factor preventing them from cultivating Indigenous food crops. Furthermore, the above quote revealed good Indigenous farming practices such as intercropping yam and pigeon peas. This practice is significant because pigeon pea is a leguminous crop and growing it around the yam mound helps to fertilize the soil for the yam, which is considered a heavy feeder. The shoot of the pigeon pea could serve as a stake to help support the yam to stay upright without the need to cut trees or branches to support the crop. This practice, therefore, prevents soil depletion, preserves trees or bamboos

otherwise used for staking, and ultimately conserves the environment. Another advantage is that pigeon pea is a shrub that forms a canopy to shade the soil from direct sun rays thereby conserving soil moisture. Hence, abandoning this intercropping practice erodes the benefits it provides. Farmers' accounts were corroborated by AEAs.

> We used to have yam which is getting extinct in Tolon District in particular. … Sorghum too is also cultivated buy few farmers because it almost four months' variety. … Millet too is only in some region that you can get millet, Tolon here only few farmers cultivate millets, those farmers who go far away they can cultivate millet. (Agent1)

The above quote revealed millet and sorghum can be cultivated in the hinterlands. This indicates that farmers' inability to produce Indigenous cereals on compound farms could be partly attributed to over-utilization of agrochemicals. Indigenous crops do better in a natural environment compared to chemically induced soil, thus explaining why millet and sorghum do well in hinterlands. Inusah, a middle-aged male farmer in the Northern belt, explains why they stopped cultivating yam:

> Of late, there is too much heat in the soil so at the time of planting, there will be heating for a long period. So, before the rain comes, most of it [suckers] will die or even got rotten. And then after harvest when you put it in a storage, the heat also reaches and because of it being stored for longer period, you also lose a lot of tubers. As a result of the rotting and all other things that has made us not to cultivate yam again. (IdI)

Inusah's quote demonstrates how changes in elevated temperatures reduce the shelf-life of crops in storage and prevent farmers from cultivating roots and tubers. However, both present and projected temperatures in Ghana are expected to increase annually (Environmental Protection Agency, Ghana [EPA], 2011; Etwire et al., 2017; Hansen et al., 2012). In Ghana, African rice and sorghum receive considerable attention among the Indigenous crops. Agricultural scientists have released a new variety of sorghum that matures in 3 months.

However, according to the farmers and AEAs, the new variety of sorghum is too exposed; therefore, it is highly susceptible to birds' attack, resulting in low adoption rates among farmers. Despite the promotion of local brown rice in Ghana (Buah et al., 2011), its cultivation is waning in the communities and farmers are moving away from local mandi rice to perfume rice (i.e., jasmine rice). This was revealed in one of the community workshops in the North:

> Those days we could plant like 4 or 5 months' varieties of maize but now our focus is into the shorter varieties like the 3 months

> [varieties] and also, we have shifted from the type of rice we use to cultivate; now we cultivate jasmine. (WS1).

Another farmer corroborated the issues raised in the above quote in a different community, confirming the shift from local rice:

> The shift in the rainfall pattern has resulted in us moving away from some of the [local] rice varieties we use to cultivate, for example, mandi and other varieties but because they are long duration, we have moved from those varieties (Dawuni). Furthermore, cultivation and consumption of Indigenous crops such as millet and sorghum have almost ceased in the South and Middle belts due to Westernization and changing food habits (Abbey et al., 2006; Demi, 2014; Ghana Statistical Service, 2016; MoFA, 2016). Thus, Indigenous cereals such as millet and sorghum are mostly consumed in the South (as porridge), while maize, the most popular food crop in the South, is also consumed only as porridge by some people in the North. This indicates cultural differences in food habits between North and South. Cassava, the second most popular food crop in the South, was once considered poverty food in the North.
>
> Farmers also reported that consumption of African Indigenous leafy vegetables (AILVs) has become seasonal due to changing weather patterns. In one of the workshops, the women farmers explained that their inability to obtain AILVs during the dry season affected household nutrition:

> Vegetables: the alefe [Amaranthussp], ayoyo [bush okra], the bra [kenaf], we love to eat these vegetables but as you see they are seasonal. We only get them in the raining season. We have a dam here but during the dry season it dries up, so we are not able to cultivate in the dry season. (WS2)

The above narration from Samata and several other women revealed drought conditions make household management very difficult for women in NRG.

Conclusion

The paper discussed the role of research in human development but also its effect on the marginalization of Indigenous communities. The article emphasized that although research has contributed immensely to human development, it was also used to commit atrocities against Black, Indigenous, and racialized populations in general. The author further discussed how Indigenous research methodologies can mitigate the coloniality of research by using a case study conducted in NRG. The author highlighted the community entry process and some of the Indigenous protocols observed to guide those interested in conducting research in NRG. The study findings revealed two major themes: overreliance on agrochemicals by smallholder farmers and the extinction of Indigenous

food crops and farming practices that existed in the communities for centuries. These conditions affect the livelihood of smallholder farmers in NRG. Based on the study's findings, the author recommends the inclusion of Indigenous farming knowledges and practices in the environmental education curriculum in Ghanaian schools. Furthermore, farmers should engage in sustainable practices such as growing tree crops, practising low tillage farming, using green manuring instead of fertilizers, and growing trees around their farmers to mitigate the impact of climate change.

Informed Consent
N/A

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The author solely conceptualized and conducted the study**.**

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N/A

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