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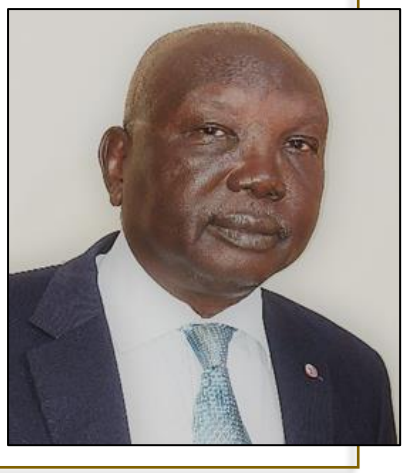
Transforming Agriculture Education in Conflict Regions: Case of South Sudan



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1. Overview of agriculture situation:

Agriculture sector includes livestock and forestry. The Republic of South Sudan is well endowed with vast land area of 648,051 km^2. Over 90 % of its population is residing in rural areas. Fortunately, over 95 % of the land in South Sudan is suitable for agriculture. About 50 million hectares are of prime agriculture land. This indicates that good agricultural lands and climatic conditions could likely allow for the cultivation of a variety of crops, vegetables, pulses, fruits as well as various tropical crops. The potential for producing cash crops such as cotton, tea, sugar cane, coffee, and many others is great but remained unexploited. Unfortunately, out of the total land suitable for agriculture, only less than 2% was under cultivation during war (Dhal, 2018). Moreover, Agriculture is still under the traditional subsistence livelihood style with use of traditional techniques of production and dependent on natural rainfall. This of course results in low productivity. The challenge is how to transform traditional subsistence agriculture. To be clear, Agriculture in South Sudan is in a low-level productivity trap, due to a number of factors. Firstly, in the wake of uncertainties about markets for additional output, farmers are neither prepared nor trained with skills to risk the cost of improved technology and the associated cost of inputs. Secondly, there is the issue of distorted prices in uncompetitive isolated market due to poor infrastructure. And thirdly, there is an almost complete absence of market information. Farmers therefore remain in a system of ''shifting agriculture" and "subsistence farming" (Ibid). The truth is that Agriculture in the Republic of South Sudan is mainly a subsistence activity where families satisfy consumption needs. In general, there is no surplus for sale and if any, it is sold for cash after the producer meets his consumption needs.

My argument is that, South Sudan being a conflict country for half a century under Sudan and about half a decade of internal conflict in 2013 and 2016 is faced with many challenges. Resistance to agriculture education is one factor. The existence of traditional farming and livestock herding abundantly in the hands of over 90% of uneducated population is the stumbling block to transformative agriculture education. Although there are few educated and literate portion of the population educated in colleges of agriculture or institutes of agriculture such as Yambio and Dr. John Garang Memorial University of Science and Technology, this makes insignificant impacts. The figure of agriculturists and veterinary officers may not count to one thousand or more in the whole country. This suggest or indicates acute shortage of qualified professionals to enhance or implement transformative agricultural education at higher education level and could not influence the traditional farmers in conflict regions effectively. Above all, the country was hit by floods, drought and various climatic factors. In 2019, 2020 and 2022 some villages were submerged, human live lost, property both livestock, crops of various types and livelihood interrupted, areas of Pibor, Bor and Greater Bahr El Ghazal , Warrap and Aweil. Most of

the road infrastructure which connect village or states to towns were also damaged. Approximately, about one million people were affected. Food insecurity, malnutrition and hunger worsened to a great extent. Agriculture though it is the main source of livelihood for over 95% of the population as well as the nucleus of the economy remained under subsistence farming. Important to note, South Sudan also holds one of the richest agricultural areas in Africa mainly in the White Nile valley, which has very fertile soils and more than adequate water supplies (National Bureau of Statistics, 2014). Unfortunately, such valuable natural resources were unutilized or tapped for improvement of food provision situation due to less agriculture transformative education.
In addition, and in the context of animal production, South Sudan has the highest livestock per capita holding in Africa with estimated livestock population of 11.7 million cattle, 12.4 million goats and 12.1 million sheep and a large number of poultry species (Onyoti Adigo Nyikwec 2022).

From this brief overview, it is imperative transforming agriculture education in conflict regions in Africa like South Sudan as a necessary requirement for ensuring food security, poverty reduction strategies with an ultimate aim of achieving prosperity and economic development in Africa. Transformative agricultural education must be backed up by indoctrination and awareness education so that the rural sector communities accept commercialization of both agriculture and cattle for economic purposes rather than prestigious matters. Value addition must be a component of agricultural transformative education as yogurt, cheese and other animal products could contribute towards improvement of nutrition security to enhance commercialization along the agrifood systems.

2. Current Status of Higher Education in Transforming Agriculture Education process in Practice:
With the independence era, there is a marked growth of higher education in South Sudan. Although the growth is not matching with increase and expansion of both primary and secondary school education, the number of public universities increased from one in 1970s to eight in 2011. They consist of five operating public universities of Juba hosting college of natural resources with agriculture specialty, Bahr El Ghazal recently created college of agriculture, Upper Nile possessing college of agriculture, Dr. John Garang created the college of agriculture as the core faculty since its establishment in 2008. Rumbek also introduced college of agriculture at initial stage of its creation and three project universities of western Equatoria in Yambio, Torit and Northern Bahr El Ghazal in Aweil. The increase in the number of universities is attributed to independence dividends. Moreover, the intake or admission into these higher institutions has increased greatly compared to the period when the university was one or three (Juba, Upper Nile and Bahr El Ghazal) It reached 12,896 (Dhal, 2018). This is an indication that transformative agricultural education will likely generate comparatively good results in South Sudan.

In practice, the transformative process for agriculture education in South Sudan meaningfully started with the establishment of universities of science and Technology in 2008/2010, e.g. Dr. JGMUST. Dr. John Garang Memorial University of Science and Technology transformative agriculture education is built around the following goals and objectives:

- To produce highly qualified agricultural professionals.
- To advance and promote knowledge, skills, self-reliance and sound character for food production and sustainability.
- To conserve, manage the biodiversity, natural resources and environment.

The vision of the college of agriculture and the Dr.John Garang Memorial university of Science and Technology (Dr JGMUST) is to seeking science-based solutions for agriculture, food security, poverty and hunger reduction as well as environmental sustainability for the people of South Sudan and Africa at large (Dr. JGMUST Calendar 2021-2025).

To transform agriculture education, higher learning institutions and universities must be committed to high quality agriculture education, research, and community development that is required to improve the well-being of people.

The 19th RUFORUM Annual General Meeting's main theme ***'Transforming Higher Education to Sustainably Feed and Create Prosperity for Africa'*** must be geared towards increase in agriculture productivity and improvement of food security with aim to ensure economic development and prosperity of people in the rural areas and in the cities. Through research, skills training, information sharing and extension services may likely result into mitigation of hunger, malnutrition, crop failure, poverty reduction and commercialization of agriculture in South Sudan. As an institution of higher education, Dr. JGMUST with Juba university have undertaken transformative agricultural education activities of "Building Food System Resilience in Protracted Crisis in Bor, South Sudan. A brief report by Peter Ajak from Dr. JGMUST shows that Department of Extension program was under Nuffic Horn of Africa (HortiTMT) from the Wageningen University and Research, Netherlands with Collaboration with EastWestSeeds-Knowledge Transfer and Wageningen Centre of Development Innovation. In 2022, January-March, together with EastwestSeed-KT established the Learning Plot in University of Juba for improved vegetables production practices as In-Country support and in the same year in March, established the learning Plot for Vegetables production in Dr. John Garang Memorial University of Science and Technology, Bor. The project involved students and farm technicians and interested farmers' outside the university from the neighbouring communities. The training was on Seedlings production, Land Preparation, Soil and Water Conservation, Irrigation, Fertilization, Pests and diseases identification and control, Post-Harvest handling and Adult Education and Training. Over 300 students and 100 farmers were trained through farmers' field visits, on Farm Training and Exchange visit from NGOs Such as Sparks and Cord aid. In June during the Farmers Field Day to show case the Production results, trainers invited the FAO, CRS, Sparks, Ministry of Agriculture, WFP, Save the Children, University staffs, Director, Students and farmers groups. One hundred twenty (120) People attended. In the same year of 2022, November-March of 2023, second crops cycle started focusing on community outreach. Farmers from outside of the university among the communities were trained. Through this training program, three modern farms that are now registered by RRC commission were established. The College has also started the Secondary schools program to create the career path and boost the Nutrition and Entrepreneurship of the youth in Bor. Through this program, three schools are being supported through training and establishment of Vegetables Learning Clubs in Sheikh Al-Nur, Daystar Secondary and Green Belt Academy. Currently to create preparedness for risks and stress or in vegetables production, the college is now introducing training of farmers in techniques of Value Addition to Okra and Hot Pepper. In our future plan for 2024, with the current MoU signed by the University with EastwestSeed-KT, we shall involve the Ministry of Agriculture to establish the Vegetables Learning Plot in each county of Jonglei State, so that it conducts training of extension agents at State level and lastly to start as horticulture certificate course on Improved Vegetables Production.

More effectively, Dr. JGMUST in partnership with UNMISS and particularly South Korean Contingency introduced rice test plantation project for the first time since the establishment of this university. In addition, and in an attempt to make transformation of agriculture education effective and efficient and scientifically relevant, Dr. JGMUST in collaboration with International Organization for Migration signed an MOU to introduce disaster risk management and sustainable development into graduate studies programme last month. The programme and curriculum are developed along the understanding of solution provision on how to cope with rampant floods in Jonglei state. Most of the scientific work is to undertake scientific research aimed at how to manage flood water for agricultural development through irrigation system rather than dependent on scarce rainfall. The intension is to increase agricultural productivity and enhance food security in South Sudan.

Next year, rice plantation will be extended with an intention to train communities in Jonglei state. This is to create community farmers group in rice growing sector for commercial purposes.

In addition, the university has created agricultural training center in Eastern Lakes state (Awecrial county) along the River Nile. A variety of crops were tested here including maize, onions, Irish potatoes and various vegetables. Rice will also be introduced in this training Centre. Both rice in Jonglei and Eastern Lakes will use gravity irrigation to ensure farming throughout the year.

On campus, there is a training farm for multi-agricultural purposes including vegetables such as tomatoes, chilies, watermelon, and pumpkin and So on. This vegetable farm is supported by Eastern-Western Seeds organization and the MOU was signed last month. A small dairy farm containing few numbers of cows and over 400 goats is a part of this on- campus farm.

Transformation of agriculture education is highly supported by RUFORUM through staff training. A good number of our lecturers and TAs are currently doing PhDs and Masters in Cameroon, Botswana, Kenya and so on. Already 5 staffs are Ph.D. candidates and one doing masters of Science and about ten are on the waiting list. I highly acknowledge with appreciation the support of RUFORUM in the persons of Professor Adipala and Prof.Patrick Okori, respectively former and current Executive Secretary.

This support will produce highly qualified staff that will train more agriculturists and therefore transforming agricultural education will likely have great impact in terms of enhancing productivity and commercialization of agriculture in the Republic of South Sudan.

3. Conflict Consequences on transformative agricultural education:

Conflict had some devastative consequences on higher education and transformative agricultural education in many ways. To mention a few, first some higher institutions of learning were relocated to more security cities like Juba. Upper Nile University is one example. Secondly, outreach programs offered by college of agriculture were not accessible and the communities training thwarted. Thirdly the teaching staff were threatened and could not risk going to training agricultural centers outside the university campuses. The example is Mbili and Momoi agricultural farms under Bahr El Ghazal University in Wau. The consequences of conflict in Africa and particularly South Sudan directly brought transformative education into halt for a period of time. Farmers were also threatened and as a result, they abandoned crop farming to a large extent. Worse observed experiences were food insecurity, hunger, malnutrition, starvation and death toll in a country with agricultural potentials in Africa such as South Sudan. This was because the transformative agricultural education was hindered by conflict factors. Nevertheless, with prevalence of relative peace transformative agricultural education is intensively being applied practically and effectively and soon agriculture productivity may likely increase to stimulate development and prosperity.

4. Conclusion:

It is imperative, transforming agriculture education in conflict regions in Africa like South Sudan is a necessary requirement for ensuring food security, poverty reduction strategies with an ultimate aim of achieving prosperity and economic development in Africa. Transformative agricultural education must be backed up by indoctrination and awareness education so that the rural sector communities accept commercialization of both agriculture and cattle for economic purposes rather than prestigious matters

There is a marked growth of higher education in South Sudan. More universities have created colleges of agriculture to enable the country to effectively transform agricultural education in favour of the well-being of the rural population and sustainable development of the Republic of South Sudan.

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ABOUT THE AUTHOR

Prof. Abraham Matoc Dhal is the 3rd Vice Chancellor of Dr. John Garang Memorial University of Science and Technology, Jonglei State, Bor, the Republic of South Sudan. Previously he has been Head of Economic Department, Coordinator of postgraduate Programmes, Deputy Dean, later Acting Dean, Principal of Rumbek University, Deputy Vice Chancellor for Administration and Finance, Bahr El Ghazal University, a Non-Executive Member of the Board of Directors, Bank of South Sudan. He is the person who built the Triple Complex Building, which consist of ten large lecture halls, one large conference, examination hall, and twenty-three beautiful offices for the first time in permanent structures. He is an instrumental agent in transforming the academic programme to suit science and technology status of the university. He has taught both undergraduate and graduate students in economics for over three decades in Sudan universities and in the Republic of South Sudan, supervised undergraduates and postgraduate students, authored, co-authored and edited several books, published articles in referred journals, contributed books chapters in international publications. He has presented scientific papers in international and national fora. He holds a PhD and an MSc, both from University of Khartoum in Sudan, and a BSc in Economic from University of Juba in South Sudan.

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