



FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

October 30, 2021



*Borlaug Higher Education for
Agricultural Research and Development*

Final Scholar Report: South Sudan

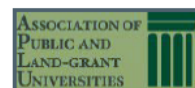
By

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Executive Summary

Michigan State University (MSU) is the implementing entity of the Borlaug Higher Education for Agricultural Research and Development (BHEARD) program. As part of the United States government's Feed the Future initiative, BHEARD is funded by the United States Agency for International Development (USAID), through the International Maize and Wheat Improvement Center (CIMMYT).

Honoring the legacy of Nobel Peace Prize Laureate Norman Borlaug, the program increases the number of agricultural scientists and strengthens scientific institutions in partner countries. BHEARD supports long-term training of agricultural researchers at the master's and doctoral levels, linking scientific and higher education communities in Feed the Future priority countries and the United States.



A BHEARD scholarship supports coursework at U.S. and regional universities in Africa, Brazil, Bangladesh, and India; providing funding for research and post completion research in the student's home country. In addition, the program provides a variety of allowances to cover training costs and laboratory fees. BHEARD also aims to develop, test and evaluate new models of small-scale institutional capacity development.

This report documents BHEARD programmatic activities from October 1, 2018 through September 30, 2019. It includes a program overview, financial summaries, and student updates for South Sudan

Acknowledgement and thank you to all BHEARD staff who have worked for this program and contributed to this report.

- John Medendorp, Director
- Mathias Ndizihiwe, Student Progress Coordinator
- Cait Goddard, Institutional Capacity Development Lead
- Jen Riebow, Fiscal Officer

Activity Summary

The Borlaug Higher Education for Agriculture and Development (BHEARD) program, supported by US Agency for International Development (USAID) develops agricultural scientists and increases agricultural research capacity in Feed the Future partner countries including South Sudan. BHEARD has provided scholarships to students seeking masters and doctorate degrees at US and regional academic institutions and has provided funding for agricultural research in their home countries. The program also developed, tested, and evaluated new models of small-scale institutional capacity development. BHEARD sponsored

35 South Sudanese scholars, 25 successfully completed their program and went back home after completion of their degree programs. Within the 25, eight are from Cohort 1, five from Cohort 2, seven from Cohort 5 and five from Cohort 6. Fifteen of the scholars who started under the BHEARD program were passed off, with the assistance of a Mission buy-in, to the Feed the Future Innovation Lab for Legume Systems Research. Of these 15, twelve completed their programs after the pass off. Three were withdrawn from the program for lack of compliance.

Successes

The incorporation of six students from the closing InnovATE program at Virginia Tech University into the BHEARD program presented opportunities for both programs. All but one of the InnovATE scholars were able to successfully complete their programs under the BHEARD program. Overall, the contribution to the human research capital of Sudan was significant through the BHEARD program.

Challenges

COVID restrictions, especially at Kenyan universities, added a layer of complication to an already complicated support of the South Sudanese scholars. Ten scholars withdrew or were withdrawn from the program (Cohort 1: 2 scholars, Cohort 2: 4 scholars and Cohort 5: 4 scholars were suspended from the program due to violations of Contract of Sponsorship (2), Low academic grades (2) and not completing within the timeline (4).



Daniel Ajuong, a BHEARD scholar on field trip at Kenya Agricultural and livestock Research Organisation (KALRO) at Njoro food crops centre



Dr. Dominique Gore in the laboratory conducting semen analysis in the Bull Semen Center under Agricultural Development Corporation in Kitale, Kenya



Yensuk Achikule during the briefing of enumerators for data collection in Kikuyu Sub- County, Kiambu County in central Kenya on 30th/01/2019.



John Alosias and Emmanuel Atiba, BHEARD scholars and 2 staff from the research station at Virginia State University during the Graduation ceremony on 12/12/2015

BHEARD Final Financial Report – South Sudan September 15, 2021

Michigan State University (MSU) received funding for the BHEARD project from USAID through International Maize & Wheat Improvement Center (CIMMYT). The project originally began in 2012, with funds being allocated for South Sudanese scholars in 2014 and in 2017. MSU received \$2,476,047 USD from USAID to support scholars’ programs from South Sudan.

RC103926 - A1130 SOUTH SUDAN (FUNDED FROM MISSION	\$906,732
RC105526 - A1147 SOUTH SUDAN (FUNDED FROM MISSION)	\$1,569,315
TOTAL FUNDS RECEIVED FOR SOUTH SUDAN	\$2,476,047

As of the August 31, 2021, financial statement, MSU has spent \$2,875,607 USD on South Sudanese scholars from the BHEARD project, with MSU contributing \$399,560 of these funds. MSU did not track the expenses by scholar for the entirety of the program, so it is not possible to break down the cost by scholar. With only some of the expenses coded by university, MSU can only generalize the data. MSU admitted 35 scholars from South Sudan into the BHEARD program. Of these, six studied in the United States, three in South Africa and the balance in Kenya.

Estimated expense by university in USD:

EGERTON UNIVERSITY (KENYA)	\$438,112.17
STELLENBOSCH UNIVERSITY (SOUTH AFRICA)	\$4,691.72
UNIVERSITY OF NAIROBI (KENYA)	\$1,077,550.57
UNIVERSITY OF PRETORIA (SOUTH AFRICA)	\$10,433.44
VIRGINIA TECH UNIVERSITY (USA)	\$1,165,806.41

The balance of the funds for South Sudanese scholars was spent on MSU faculty and staff salaries as approved in the original agreement. For the overall program costs, the estimate cost per scholar:

ESTIMATED COST PER SCHOLAR \$82,160.19

During the project, the financial oversight was handled by several people. Looking back, it would have been very beneficial if the reporting of expenses had been consistently handled through the life of the project, so proper reports could have been generated to show the actual costs per scholar.

LIST OF ALL SCHOLARS

Below is the list of all South Sudanese sponsored students and their current status.

NAME (first and last)	SEXE	COHORT	STUDENT STATUS	UNIVERSITY	SUBJECT AREA	ACADEMIC LEVEL	GRADUATION YEAR
1. Awuol, Chol	M	Cohort 6	Completed	University of Nairobi	Agronomy	MSC	
2. Magot, Michael	M	Cohort 6	Completed	University of Nairobi	Agricultural Economics	MSC	
3. Majok, Dan	M	Cohort 6	Completed	University of Nairobi	Agricultural Economics	MSC	FY21
4. Samuel, Stephen Edward	M	Cohort 6	Completed	University of Nairobi	Agricultural Entomology	MSC	-
5. Ajak, Peter	M	Cohort 5	Completed	University of Nairobi	Livestock Production	MSC	FY21
6. Ajuong, Daniel	M	Cohort 5	Completed	University of Nairobi	Plant Pathology	MSC	
7. Elia, Moi	M	Cohort 5	Completed	University of Nairobi	Agronomy	MSC	
8. Gore, Dominic	M	Cohort 5	Completed	Egerton University	Animal Sciences	PhD	FY21
9. James, Robert Okumu	M	Cohort 5	Completed	University of Nairobi	Agricultural Economics	MSC	
10. Lobojo, Doris	F	Cohort 5	Withdrawn	University of Nairobi	Veterinary Epidemiology & Economics	MSC	
11. Thiong, Abraham	M	Cohort 5	Completed	University of Nairobi	Livestock Production Systems	MSC	FY21
12. Victor, Tarbal	M	Cohort 5	Completed	University of Nairobi	Animal Production	MSC	FY21
13. Yensuk, Achikule	M	Cohort 5	Completed	University of Nairobi	Livestock Production Systems	MSC	FY21
14. Lasu, Gloria	F	Cohort 5	Withdrawn	Egerton University	Horticulture	MSC	

15. Wani, Lubajo	M	Cohort 5	Completed	University of Nairobi	Land and Water Management	MSC	
16. Ware, Joyce	F	Cohort 5	Withdrawn	University of Nairobi	Veterinary Public Health	MSC	
17. Ocaya, Aryemo	M	Cohort 5	Withdrawn	University of Nairobi	Agronomy	MSC	
18. Deng, Mamer John	M	Cohort 2	Completed	Egerton University	Animal Nutrition	MSC	FY17
19. Garang, Manyok John	M	Cohort 2	Completed	Egerton University	Environmental Science	MSC	FY17
20. Kok, Majok Ayuen	M	Cohort 2	Completed	Egerton University	Agronomy	MSC	FY17
21. Mangara, John Loro	M	Cohort 2	Completed	Egerton University	Animal Science (Nutritional Physiology)	PhD	FY18
22. Sila, Sabri Joshua	M	Cohort 2	Completed	Egerton University	Agricultural Engineering (Irrigation)	PhD	
23. Anyang, Thon Chol	M	Cohort 2	Withdrawn	Egerton University	Limnology	MSC	-
24. Malual, Aduol Athuai	M	Cohort 2	Withdrawn	Egerton University	Soil Science	MSC	-
25. Nicola, Saman Nicola	M	Cohort 2	Withdrawn	University of Nairobi	Environmental and Biosystems Engineering	MSC	-
26. Riak, Ayor Elizabeth	F	Cohort 2	Withdrawn	Egerton University	Agronomy	MSC	-
27. Abin, Samuel	M	Cohort 1	Completed	University of Pretoria	Animal Science: Animal Breeding and Genetics	MSC	FY15
28. Alosias, John	M	Cohort 1	Completed	Virginia State University	Interdisciplinary Studies	MSC	FY16
29. Atiba, Emmanuel	M	Cohort 1	Completed	Virginia State University	Interdisciplinary Studies	MSC	FY16
30. Bilal, Ruba	M	Cohort 1	Completed	Virginia Tech	Forestry	PhD	FY17
31. Gore, Dominic	M	Cohort 1	Completed	University of Pretoria	Animal Science, Production Physiology	MSC	FY16
32. Sebit, Martin	M	Cohort 1	Completed	Virginia Tech	Agriculture and Extension Ed	PhD	FY17
33. Talamuk, Raphael	M	Cohort 1	Completed	Stellenbosch University	Agriculture	MSC	FY16
34. Lado, Flora	F	Cohort 1	Withdrawn	Virginia Tech	Mining and Minerals Engineering	PhD	-
35. Wura, Majango	M	Cohort 1	Withdrawn	Virginia Tech	Fisheries and Wildlife	PhD	-

PAPER PUBLICATIONS BY SCHOLARS

The publication rate for South Sudanese scholars was quite low compared to other countries. South Sudan, however, had proportionally more MSc (as opposed to PhD) students than most other countries. Masters programs tend to focus less on publishing as a requirement for graduation, meaning that one would expect a diminished publishing record from these students. Below are the peer reviewed publications by South Sudanese scholars available at the time of the closing of the BHEARD scholars program in September of 2021.

STUDENT NAME	TITLE	AUTHORS	PUBLISHED IN	PUBLICATION DATE
1. Dominic Lado Marino Gore	Short-term oestrous synchronisation protocol following single fixed-time artificial insemination and natural mating as alternative to long-term protocol in dairy goats	D.L.M. Gore, J. N. Mburu, T.O. Okeno, T. K. Muasya	Small Ruminant Research	07/31/20
2. Dominic Lado Marino Gore	Comparative reproductive performance of Saanen and Toggenburg bucks raised under tropical environment	D.L.M. Gore, T.K. Muasya, T.O. Okeno, J.N. Mburu	Tropical Animal Health and Production	05/27/20
3. Dominic Lado Marino Gore	Short-term oestrous synchronisation protocol following single fixed-time artificial insemination and natural mating as alternative to long-term protocol in dairy goats	D.L.M. Gore, J.N. Mburu, T.O. Okeno, T.K. Muasya	Small Ruminant Research	07/31/20
4. Dominic Lado Marino Gore	Comparative reproductive performance of Saanen and Toggenburg bucks raised under tropical environment	D.L.M. Gore, T.K. Muasya, T.O. Okeno, J.N. Mburu	Tropical Animal Health and Production	05/27/20
5. Tarbal Daniel Comboni Victor	Evaluation Of Genes Associated With Mastitis In Crossbred Dairy Cattle	Daniel. CV. Tarbal, Joseph. O. Jung'a and Rawlynce. C. Bett	International Journal of Agriculture and Environmental Research (ijaer)	04/01/20
6. Tarbal Daniel Comboni Victor	Relationship between California mastitis test scores and somatic cell counts in different crossbred dairy cattle genotypes	Daniel. CV. Tarbal, Joseph. O Jung'a and Rawlynce. C. Bett	International Journal of Environment and Agriculture Research (IJOEAR)	05/27/20
7. Abin, Samuel	Population structure and genetic trends for indigenous African beef cattle breeds in South Africa	S Abin, HE Theron, E van Marle-Köster	South African Bureau for Scientific Publications	
8. Abin, Samuel	Comparative performance of dairy cows in low-input smallholder and high-input production systems in South Africa	Abin, S., Banga, C. B., Visser, C.	Tropical Animal Health and Production	03/28/18

9. Atiba, Emmanuelle	Meat Quality Characteristics of Goat (<i>Capra hircus</i>) Artificially Infected with <i>Haemonchus contortus</i> and Fed High and Low Protein Diets	Emmanuel M. Atiba, Vitalis W. Temu, Milton M. Lado, Brian Sayre	Science Letters	12/15/16
10. Atiba, Emmanuelle	Effects of Dietary Protein Supplementation on the Performance and Non-Carcass Components of Goats Artificially Infected with <i>Haemonchus contortus</i>	Emmanuel M. Atiba, Brian Sayre, Vitalis W. Temu	Science Letters	06/25/16
11. Bilal, Ruba	Soil CO ₂ efflux and water use efficiency across diverse cover types in southern Appalachian hardwood forests	Bilal, Ruba C.; Seiler, John R.; Strahm, Brian D.; Peterson, John A	United States Department of Agriculture	
12. Kok, Majok Ayuen	Effect of sowing date on grain quality of Sorghum (<i>Sorghum Bicolor</i> L. Moench) in the Nile Corridor agroecological zone of South Sudan	Kok, M.A., Ouma, J.P.A., Ojwang, P.P.O.	African Journal of Food, Agriculture, Nutrition, and Development	11/01/17
13. Ocaya, Aryemo	How Canadian Feminism Can Improve Lives Globally	Aryemo Sunday Ocaya	The Toronto Star	08/15/18
14. Sebit, Martin	Learning Through Story: Using Narrative Inquiry in a Graduate-Level Food Security Course	Dr. Kim Niewolny, Rebecca Landis, Garland Mason, Dr. Philip D'Adamo-Damery, Robert Bass, Dana Hogg, Amanda McGee, Shreya Mitra, Oladayo Omosa, Martin Sebit, Asha Shayo, Emily Sorensen, Elli Travis, and Lily Yang		06/16/15
15. Majok Ayuen Kok	Sowing date influence on performance and yield of sorghum (<i>Sorghum bicolor</i> L. Moench) in the Nile Corridor region of South Sudan	Kok M.A.G, Ouma J. P and P. O. O Ojwang	Research Journal of Agriculture	10/01/16
16. Majok Ayuen	Effect of sowing date on yield and grain quality of sorghum (<i>Sorghum bicolor</i> L. Moench) in the Nile Corridor region of South Sudan	Kok M. A, Ouma J. P and P. O Ojwang	African Journal of Food, Agriculture, Nutrition and Development.	10/01/17