



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: Mozambique

By

The BHEARD Administrative Team
Michigan State University

Office of the Dean
College of Agriculture and Natural Resources
Michigan State University
446 W. Circle Drive, Room 102
East Lansing, Michigan 48824-1039

Email: CGC.BHEARD@campusad.msu.edu

Project Website: <https://www.canr.msu.edu/bheard>



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 Mozambique.

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

- John Medendorp, Director
- Mathias Ndizihwe, 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

Mozambique. 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 22 scholars from Mozambique, 18 successfully completed their program and went back to their home institutions after completion of their degree programs.

Successes

The decision to educate Mozambican scholars at Brazilian universities turned out to be a very good decision. The high quality of the Brazilian programs was evident in the academic rigor displayed in the theses and dissertations of the Mozambican students. The cost of educating in Brazil was significant lower than the cost of educating in the US, and the Mozambican students flourished under both the rigor and the discipline of the Brazilian programs. Not one Mozambican scholar experienced delays in the completion of their programs, much to the credit of the academic authorities at the institutions at which they studied. At the request of the Mozambique Mission the BHEARD scholars were concentrated in the area of nutrition. Through the BHEARD program, a significant contribution was made to the human capital in nutrition in Mozambique.

Challenges

Four scholars were withdrawn due to the following reason:

- Two for personal
- One for not completing within the timeline
- One for low grades



Figure 1 Josee Aulario Dique, Hybridization



Figure 2 BHEARD scholar from Mozambique during her thesis defense.

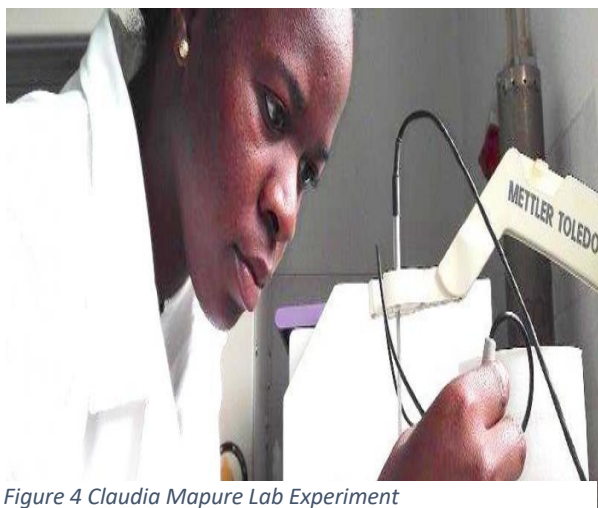


Figure 4 Claudia Mapure Lab Experiment



Figure 3 Violeta Macie placing the tray while collecting excrete

LIST OF ALL SCHOLARS

The following scholars participated in the BHEARD Mozambique scholars program, sponsored by the USAID Mozambique Mission.

NAME (first and last)	SEX	COHORT	STUDENT STATUS	UNIVERSITY	SUBJECT AREA	ACADEMIC LEVEL	GRADUATION YEAR
1. Alforma, Antonia	F	COHORT 6	COMPLETED	Federal University of Rio Grande do Sul	Animal Science	MSc	FY2020
2. Culpa, Matias	M	COHORT 6	COMPLETED	FIOCRUZ	Public Health	MSc	FY2021
3. Eduardo, Rosana	F	COHORT 6	COMPLETED	Universidade Federal de Lavras	Administration	MSc	FY2020
4. Pedro, Cesar	M	COHORT 6	COMPLETED	Universidade Federal de Vicosa	Genetics and Improvement	MSc	FY2020
5. Vulalo, Maria	F	COHORT 6	COMPLETED	Universidade Federal de Vicosa	Plant Science	MSc	FY2021
6. Dique, Jose	M	COHORT 5	COMPLETED	Universidade Federal de Vicosa	Genetics and Improvement	MSc	FY2020
7. De Castro, Elsa Merina Jose Joaquim	F	COHORT 5	COMPLETED	University of Eduardo Mondlane	Food Technology	MSc	FY2020
8. Tambo, Fidel	M	COHORT 5	COMPLETED	Universidade Federal de Lavras	Agricultural Resources	MSc	FY2019

9.	Bengala, Pedro	M	COHORT 5	COMPLETED	Universidade Federal de Vicosa	Plant Engineering	MSc	FY2019
10.	Fazenda, Lucidio	M	COHORT 5	COMPLETED	Universidade Federal de Lavras	Agronomy and Plant breeding	MSc	FY2019
11.	Francisco, Cremildo		COHORT 5	COMPLETED	Universidade Federal de Santa Catarina	Agroecosystems	MSc	FY2019
12.	Janeque, Ricardina	M	COHORT 5	COMPLETED	Universidade Federal de Santa Maria	Agribusiness	MSc	FY2019
13.	Macie, Violeta	F	COHORT 5	COMPLETED	Universidade Federal de Mato Grosso do Sul	Animal Science	MPhil	FY2019
14.	Muchanga, Maria	F	COHORT 5	COMPLETED	Universidade Federal de Santa Catarina	Agricultural and Natural Ecosystems	MSc	FY2020
15.	Paulo, Edvaldo	F	COHORT 5	COMPLETED	Universidade Federal de Vicosa	Plant Engineering	MSc	FY2019
16.	Mapure, Claudia	F	COHORT 3	COMPLETED	University of Eduardo Mondlane	Food Technology	MSc	FY2018
17.	Alface, Angelo	M	COHORT 3	COMPLETED	Universidade Federal de Vicosa	Water and Environmental Resources	MSc	FY2018
18.	Assamo, Samito	M	COHORT 3	WITHDRAWN	Federal University of Rio Grande do Sul	-	MSc	-
19.	Sabe, Iris	F	COHORT 2	COMPLETED	University of Eduardo Mondlane	Food Technology	MSc	FY2016
20.	Sitoe Cachomba, Isabel	F	COHORT 2	WITHDRAWN	Virginia Tech	Economics, Agriculture	PhD	-
21.	Tomo, Alda	F	COHORT 1	WITHDRAWN	Virginia Tech	Economics, Agriculture	PhD	-
22.	Possolo, Edna	F	COHORT 1	WITHDRAWN	Cornell University	Nutrition	MSc	-

PAPER PUBLICATIONS BY SCHOLARS

Completing scholars were responsible for the following publications. The publication rate for Mozambican scholars (.8) is slightly below the average for BHEARD country cohorts, but this may be attributed to the fact that the majority of Mozambican scholars were pursuing Masters degrees rather than PhDs. In light of that fact, the publication rate for the Mozambican scholars is quite impressive.

STUDENT NAME	TITLE	AUTHORS	PUBLISHED IN	PUBLICATION DATE
1. Angelo Baptista Alface	Evaluative mapping of the area irrigated by center pivot in Mozambique	Ângelo Baptista Alface and Hélio do Rosário Luís Armazia	Forestry Researcher and Engineering: International Journal	11/22/19

2.	Angelo Baptista Alface	Sugarcane spatial temporal monitoring and crop coefficient estimation through NDVI	Silvio Bueno Pereira, Roberto Filgueiras and Fernando França da Cunha	Revista Brasileira de Engenharia Agrícola e Ambiental	05/23/19
3.	Cremildo António Luís Francisco	Aggregation, carbon, nitrogen, and natural abundance of 13C and 15N in soils under no-tillage system fertilized with injection and surface application of pig slurry for five years	Cremildo António Luís Francisco, Arcângelo Loss, Gustavo Brunetto, Rogério Gonzatto, Sandro José Giacomini, Celso Aita, Marisa de Cássia Piccolo, Carina Marchezan, Gustavo Scopel & Ricardo Fagan Vidal	CARBON MANAGEMENT	05/16/21
4.	Alface, Angelo	Sugarcane Spatial-Temporal Monitoring and Crop Co-efficient Estimation Through NDVI	Angelo B. Alface, Silvio B. Pereira, Roberto Filgueiras, and Fernando F. Cunha	Revista Brasileira de Engenharia Agrícola e Ambiental	03/28/19
5.	Alforma, Antónia Mendes Paizano	Desempenho em bovinos de corte	Antónia Alforma, Helena Fagundes, Luís Felipe Bellebone e Brum, Everton Sartori e Júlio Barcellos	Revista AG	11/20/19
6.	Alforma, Antónia Mendes Paizano	Reproductive parameters of beef cows weaned early	Antónia Mendes Paizano Alforma, Marcela Kuczynski da Rocha, Odilene de Souza Teixeira, Júlia Abud Lima, Vanessa Silva Fernandes, Júlio Otávio Jardim Barcellos	Rev. Bras. Reprod. Anim	07/08/19
7.	Alforma, Antónia Mendes Paizano	Aspectos reprodutivos de vacas de corte submetidas à diferentes tipos de desmame	Antónia Mendes Paizano Alforma, Marcela Kuczynski da Rocha, Odilene de Souza Teixeira, Yago Machado da Rosa, Maria Carolina Muniz de Oliveira, Télis Adolfo Cumbe & Júlio Otávio Jardim Barcellos	ANAIS XIV JORNADA NESPro & IV SIMPÓSIO INTERNACIONAL SOBRE SISTEMAS DE PRODUÇÃO DE BOVINOS DE CORTE	09/10/19
8.	Alforma, Antónia Mendes Paizano	Respostas fisiológicas de terneiros de corte desmamados em idades diferentes	Odilene de Souza Teixeira, Marcela Kuczynski da Rocha, Everton Dezordi Sartori, Antónia Mendes Paizano Alforma, Vanessa Silva Fernandes, Maria Eugênia Andrighetto Canozzi & Júlio Otávio Jardim Barcellos		09/10/19
9.	Alforma, Antónia Mendes Paizano	Evolução da produção de bovinos de corte no Rio Grande do Sul: uma análise temporal	Maria Carolina Muniz de Oliveira, Odilene de Souza Teixeira, Antónia Mendes Paizano Alforma & Júlio Otávio Jardim Barcellos		09/10/19
10.	Dique, Jose	Desempenho de progênies de feijão vermelho visando obtenção de linhagens de porte ereto	Lenin Pereira Barros, JOSE EUSTAQUIO DE SOUZA CARNEIRO, Ana Laura Nicomedes Carneiro, José Eulário Lampi Dique, Michel Henriques de Souza, Vinícius Lopes de Melo	SIA- SIMPOSIO DE INTEGRACAO ACADEMICA	10/25/19

11. Dique, Jose	PARÂMETROS GENÉTICOS DE CARACTERES CORRELACIONADOS COM A PRODUTIVIDADE DO GRÃO DE FEIJÃO GUANDU		César Pedro1*; Marques Cachisso Bambo Donça2; Cosme Damião Cruz1; Salva Inácio Somueque2 Ivan Paiva Barbosa Magalhães1; José Eulário Lampi Dique3.	05/30/19
12. Dique, Jose	Comportamento agrônomo de linhagens de feijão carioca no ciclo I de seleção recorrente desenvolvidos na UFV, em Coimbra, MG, na safra 2017	DIAS, F. S.1; TRINDADE, T. F. H.1; DIQUE, J. E. L.1; MOREIRA, J. V. C.1; BUSATTE, W. A. B.1; CARNEIRO, J. E. S.2		10/10/19
13. Dique, Jose	Resposta à inoculação de Bradyrhizobium japonicum em linhagens de soja em Moçambique	DIQUE, J. E. L., SILVA, R. A., CASAGRANDE, C. R. STECKLING, S. M., ROMANO, N., CARNEIRO, J. E. S.		
14. Janeque, Ricardina	Analysis of the Generation of Formal Employment by the Soybeans Production Chain in the Rio Grande Do Sul State/Brazil:2002-2015	"Angelica Cristina Rhoden, Nilson Luiz Costa, Antonia Cordeiro de Santana, Maiara Thais Tolfo Gabbi, Ricardina Antonio Janeque"	International Journal of Development Research	12/30/17
15. Pedro, Cesar	Associações da qualidade sensorial com características agrônômicas em genótipos de Coffea arabica L.	CHAGAS, F. E. O; BARBOSA, I. P.; PEDRO, C.; SILVA, R. P.; OLIVEIRA, A.C.B.	https://www.genmelhor.com.br/publicacoes (Título: Anais do IX Simpósio Internacional de Genética e Melhoramento - Big data: dos dados aos resultados Ano: 2018 ISBN: 978-85-93566-04-2 (E-book))	2018
16. Pedro, Cesar	Associações da qualidade sensorial com características agrônômicas em genótipos de Coffea arabica L.	CHAGAS, F. E. O; BARBOSA, I.; P. PEDRO, C.; SILVA, R. P.; OLIVEIRA, A.C.B.	https://www.genmelhor.com.br/publicacoes (Anais do IX Simpósio Internacional de Genética e Melhoramento - Big data: dos dados aos resultados Ano: 2018 ISBN: 978-85-93566-04-2 (E-book))	2018
17. Pedro, Cesar	Estimation of genetic parameters and correlations of maize hybrids	PEDRO, C.; OLIVEIRA NETO, J.A.G.; COSTA, L.Q.C. ; BEYENE, Y.;	https://www.genmelhor.com.br/publicacoes	2019

	evaluated under optimal and drought conditions in East Africa		es (Anais do X Simpósio Internacional de Genética e Melhoramento - Avançando as Fronteiras do Melhoramento de Plantas: Bioinformática, Biotecnologia e Análise Experimental Ano: 2019 ISBN: 978-85-93566-06-6 (E-book))	
18. Pedro, Cesar	Environmental stratification of multi-environmental trials in East Africa	PEDRO, C.; SOUSA, J.V.S.; DANTAS, O.H.G. ; BEYENE, Y.; REZENDE, W.S.; CRUZ, C.D."	https://www.genmelhor.com.br/publicacoes (Anais do X Simpósio Internacional de Genética e Melhoramento - Avançando as Fronteiras do Melhoramento de Plantas: Bioinformática, Biotecnologia e Análise Experimental Ano: 2019 ISBN: 978-85-93566-06-6 (E-book))	2019