

Waltram Second Ravelombola

Assistant Professor

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EDUCATION

Ph.D.–Agricultural, Food, and Life Sciences (Concentration: Horticulture). University of Arkansas, Fayetteville, AR, USA. 2017-2020

Dissertation: “Genetic Architecture of Salt and Drought Tolerance in Cowpea Using a Whole Genome Resequencing Approach.” (Advisor: Dr. Ainong Shi, ashi@uark.edu)

M.S. –Statistics and Analytics (Concentration: Pure Statistics). University of Arkansas, Fayetteville, AR, USA. 2019-2020

Comprehensive exam on ‘Time complexity for sampling from Gaussian mixture priors and Coefficient of determination in logistic regression’

(Advisor: Dr. Giovanni Petris, gpetris@uark.edu)

M.S. –Cell and Molecular Biology (Concentration: Horticulture). University of Arkansas, Fayetteville, AR, USA. 2015-2017 (GPA: 4.00/4.00)

Thesis: “Evaluation and Association Analysis of Salt Tolerance in Cowpea.” (Advisor: Dr. Ainong Shi, ashi@uark.edu)

M.S. –Agricultural Engineering. University of Antananarivo, Madagascar. 2012-2014

Thesis: “Identification of Phytosanitary Issues Pertaining to Tomato Cultivation and Screening of Tomato Genotypes for Resistance to Early Blight, Bacterial Blight, and Root-Knot Nematodes.” (Advisors: Dr. Rafalimanana Halitiana, rafalih@yahoo.com; Dr. Randriamarolahy Fidele)

Graduate Certificate –Statistics and Analytics. University of Arkansas, Fayetteville, AR, USA. 2019

(Advisor: Dr. Mark Arnold, arnold@uark.edu)

PEER-REVIEWED PUBLICATIONS (13 first-author papers, 10 co-author papers)

(*Shared first authorship)

(1) **Ravelombola, W.**, J. Qin, A. Shi*, L. Nice, Y. Bao, A. Lorenz, J. H. Orf , N. D. Young, and S. Chen. 2020. Genome-wide association study and genomic selection for tolerance of soybean biomass reduction under to soybean cyst nematode infestation. *PlosOne* Published: July 16, 2020. <https://doi.org/10.1371/journal.pone.0235089>.

(2) **Ravelombola, W.**, A. Shi, S. Chen, H. Xiong, Y. Yang, Q. Cui, D. Olaoye, and B. Mou. 2020. Evaluation of cowpea for drought tolerance at seedling stage. *Euphytica* 216:123. <https://doi.org/10.1007/s10681-020-02660-4>.

- (3) Yang, Y., D. Shi, Y. Wang, L. Zhang, X. Chen, X. Yang, H. Xiong, G. Bhattarai, **W. Ravelombola**, D. Olaoye, G. Yang, and A. Shi. 2020. Involvement of WRKY transcription factors and glucose metabolism in the regulation of sweet potato skin color as revealed by the transcript profiling of Sushu 8 and Zhengshu 20. *Plant Physiology and Biochemistry* 148:1-9. <https://doi.org/10.1016/j.plaphy.2019.12.035>
- (4) Cui, Q., H. Xiong, Y. Yang, S. Eaton, S. Imamura, J. Santamaria, **W. Ravelombola**, R.E. Mason, L. Wood, L.A. Mozzoni, and A. Shi*. 2020. Evaluation of drought tolerance in Arkansas cowpea lines at seedling stage. *HortScience* pages 1-13, <https://doi.org/10.21273/HORTSCI15036-20>
- (5) **Ravelombola, W.**, J. Qin, A. Shi, L. Nice, Y. Bao, A. Lorenz, J. H. Orf, N. D. Young, and S. Chen. 2019. Genome-wide association study and genomic selection for soybean chlorophyll content associated with soybean cyst nematode. *BMC Genomics* 20(1):904.
- (6) **Ravelombola, W.**, J. Qin, Y. Weng, B. Mou, A. Shi. 2019. A simple and cost-effective approach for salt tolerance evaluation in cowpea (*Vigna unguiculata*) seedlings. *HortScience* 54(8):1280–1287.
- (7) Dong, L., **W. Ravelombola***, Y. Weng, J. Qin, G. Bhattarai, B. Zia, W. Zhou, B. Mou, and A. Shi. 2019. Seedling salt tolerance for above ground-related traits in cowpea (*Vigna unguiculata* (L.) Walp). *Euphytica* 215:53, DOI:10.1007/s10681-019-2379-4
- (8) Dong, L., **W. Ravelombola***, Y. Weng, J. Qin, W. Zhou, G. Bhattarai, B. Zia, W. Yang, and A. Shi. 2019. Change in chlorophyll content over time well differentiated salt-tolerant, moderately salt-tolerant, and salt-susceptible cowpea genotypes. *HortScience* 54(9): 1477-1484.
- (9) Qin, J., A. Shi, Q. Song, S. Li, F. Wang, Y. Cao, **W. Ravelombola**, C. Yang, and M. Zhang. 2019. Genome wide association study and genomic selection of amino acid contents in soybean seeds. *Frontiers in Plant Science* 10:1445.
- (10) Weng, Y, J. Qin, S. Eaton, Y. Yang, **W. Ravelombola**, and A. Shi. 2019. Evaluation of seed protein content in USDA cowpea germplasm. *HortScience* 54(5):814–817.
- (11) **Ravelombola, W.**, A. Shi, Y. Weng, B. Mou, D. Motes, J. Clark, P. Chen, V. Srivastava, J. Qin, L. Dong, W. Yang, G. Bhattarai, and Y. Sugihara. 2018. Association analysis of salt tolerance in cowpea at germination and seedling stages. *Theoretical and Applied Genetics* DOI 10.1007/s00122-017-2987-0.
- (12) **Ravelombola W**, J. Qin, A. Shi, J.C. Miller, D.C. Scheuring, Y. Weng, G. Bhattarai, L. Dong, and W. Yang. 2018. Population structure analysis and association mapping for iron deficiency chlorosis in worldwide cowpea (*Vigna unguiculata* (L.) Walp) germplasm. *Euphytica*. 214(6):96.
- (13) **Ravelombola, W.**, A. Shi*, J. Qin, Y. Weng, G. Bhattarai, B. Zia, W. Zhou, and B. Mou. 2018. Investigation on various above-ground traits to identify drought tolerance in cowpea seedlings. *HortScience* 53(12):1757–1765.
- (14) Weng, Y., **W. Ravelombola**, J. Qin, W. Yang, W. Zhou, Y. Wang, Z. Young, and A. Shi. 2018. Evaluation of soluble sugar content in cowpea seeds. *American Journal of Plant Science* 9:1455-1466.
- (15) Xiong, H., A. Shi, D. Wu, Y. Weng, J. Qin, **W. Ravelombola**, X. Shu, and W. Zhou. 2018. Genome-wide identification, classification and evolutionary expansion of KNOX gene family in Rice (*Oryza sativa*) and Populus (*Populus trichocarpa*). *American Journal of Plant Science* 9:1071-1092. doi: 10.4236/ajps.2018.96082.

- (16) Qin, J., A. Shi, B. Mou, M.A. Grusak, Y. Weng, **W. Ravelombola**, G. Bhattarai, L. Dong, and W. Yang. 2017. Genetic diversity and association mapping of mineral element concentrations in spinach leaves. *BMC Genomics* 18 :941. doi.org/10.1186/s12864-017-4297-y
- (17) **Ravelombola, W.**, J. Qin, A. Shi, Y. Weng, G. Bhattarai, L. Dong, J.B. Morris. 2017. A SNP-Based Association Analysis for plant growth habit in worldwide cowpea (*Vigna unguiculata* (L.) Walp) germplasm. *Euphytica* 213 :284. doi.org/10.1007/s10681-017-2077-z
- (18) Shi, A., J. Qin, B. Mou, J. Correll, Y. Weng, D. Brenner, C. Feng, D. Motes, W. Yang, L. Dong, and G. Bhattarai, and **W. Ravelombola**. 2017. Genetic diversity and population structure analysis of spinach by Single-nucleotide polymorphisms identified through genotyping-by-sequencing. *PloS One* 12(11): e0188745. DOI10.1371/journal.pone.0188745
- (19) **Ravelombola, W.**, A. Shi, Y. Weng, J. Clark, D. Motes, P. Chen, and V. Srivastava. 2017. Evaluation of salt tolerance at germination stage in cowpea. *HortScience* 52(9):1168-1176.
- (20) Yuejin, W., A. Shi, **W. Ravelombola**, W. Yang, J. Qin, D. Motes, D.O. Moseley, and P. Chen. A Rapid method for measuring seed protein content in cowpea (*Vigna unguiculata* (L.) Walp). *American Journal of Plant Science* 8(10) :2387-2396. DOI: 10.4236/ajps.2017.810161
- (21) **Ravelombola, W.**, J. Qin, A. Shi, W. Lu, Y. Weng, H. Xiong, W. Yang, G. Bhattarai, S. Mahamane, W.A. Payne, J.C. Miller, Jr., D. Scheuring. 2017. Association mapping revealed SNP markers for adaptation to low phosphorus conditions and rock phosphate response in USDA cowpea germplasm. *Euphytica* 213 :183. DOI: 10.1007/s10681-017-1971-8
- (22) Bhattarai, G., A. Shi, J. Qin, Y. Weng, J.B. Morris, D. Pinnow, B. Buckley, **W. Ravelombola**, W. Yang, and L. Dong. 2017. Association analysis of cowpea mosaic virus (CPMV) resistance in the USDA cowpea germplasm collection. *Euphytica* 213 :230. DOI: 10.1007/s10681-017-2015-0.
- (23) **Ravelombola, W.**, A. Shi, Y. Weng, D. Motes, P. Chen, V. Srivastava, and C. Wingfield. 2016. Evaluation of total seed protein content in eleven Arkansas cowpea genotypes. *American Journal of Plant Science* 7(15): 2288-2296.

SUBMISSION

- (24) **Ravelombola, W.**, Qin, J.; Shi, A. Wang, F., Feng, Y., Meng, Y., Yang, C., and Zhang, M. Genome-wide Association Study and Genomic Selection for Plant Height, Maturity, Seed Weight, and Yield in Soybean. (submitted to *Scientific Reports*)
- (25) **Ravelombola, W.**, A. Shi*, B. Huynh, P. Roberts, and T.J. Close. 2020. Loci discovery, network-guided approach, and genomic prediction for drought tolerance index in a multi-parent advanced generation inter-cross (MAGIC) cowpea population (Submitted to *Horticulture Research*).
- (26) **Ravelombola, W.**, L. Dong, T.C. Barickman, H. Xiong, D. Olaoye, G. Bhattarai, B. Zia, H. Alshaya Sr., I. Alatawi, and A. Shi*. 2020. Evaluation of Salt Tolerance in Cowpea at Seedling Stage (Submitted to *Euphytica*)

COMPUTER SKILLS

Unix environment
Sequence alignment: GATK
Remote High Performing Computer (HPC)

Programming language: C++, JavaScript
Scripting language: R, Python
Genome assembly and annotation: Trinity, Apollo
Microsoft office: Word, Excel, Power Point, Access
Statistics: SAS, JMP Genomics, XLStat
Genetic diversity: Clustal W2, MEGA, Darwin
Association mapping: TASSEL, GAPIT, PLINK, FarmCPU, BLINK
Genetic maps and QTL analysis: MSTmap, JoinMap, WinQTL Cartographer, Qgene, Rqtl
QTL X QTL interaction: QTL Network, Rqtl
Genomic selection: various packages on computational statistics and breeding value estimation
Metagenomic analysis: Galaxy
Others: SSR locator, BioEdit, Structure, GenStat, BLAST, Batch 3 Primer, Mapdisto

JOURNAL REVIEWER

Euphytica
HortScience
Phytopathology
Crops Science
Journal of Crop Improvement
Plant Breeding
Pest Management Science
International Journal of Vegetable Science
Thai Journal of Agricultural Science
Jurnal Natural
Frontiers in Genetics (2020-Present: Editorial Board)

PROFESSIONAL EXPERIENCE

Assistant Professor- Organic and Specialty Crop Breeding, Texas A&M AgriLife Research& Extension, Vernon, Texas, USA. 08/2020-Present

- Leading and managing the organic and specialty crop breeding program
- Working on grants for organic and specialty crop breeding program
- Developing crop cultivars suitable to organic farming systems in Texas and beyond
- Developing molecular markers for important traits in agriculture
- Mapping genes controlling important traits in agriculture

Research Assistant- Molecular plant breeding and genetics, University of Arkansas, Fayetteville, AR, USA. 08/2015-07/2020

- Conducting a Genome-Wide Association Study (GWAS) for salt and drought tolerance in cowpea
- Performing a QTL analysis for salt tolerance in cowpea
- Evaluating cowpea protein and sucrose content
- Analyzing whole genome resequencing (WGRS) and genotyping-by-sequencing data in cowpea
- Extracting DNA

- Designing PCR primers
- Conducting PCR analysis for SSR and SNP discovery and validation
- Marker-assisted selection in plant breeding

Research Assistant- Crop improvement and plant protection, National Center of Research Applied to rural Development FOFIFA, Department of Agronomic Research, Antananarivo, Madagascar. 2013-06/2015

- Supervised graduate student work
- Conducted crosses for multiple disease resistance in *Phaseolus vulgaris*
- Conducted research on the methods of control of bruchids in *Phaseolus vulgaris*
- Screened tomato genotypes from IITA-AVRDC for resistance to early blight, bacterial blight, and root-knot nematodes
- Conducted greenhouse and field evaluation related to powdery mildew in Bambara groundnuts (*Vigna subterranea*)
- Conducted research on mutational breeding for drought tolerance in Bambara groundnuts (*Vigna subterranea*)
- Evaluated the efficiency of biocontrol agents in tomato

International Consultant- Underutilized crops in the southern regions of Africa, Crops For the Future Research Centre CFFR, 04/2014-06/2015

- Collected data related to the production, prevalence, and economy of underused crops
- Analyzed data
- Presented data during the CFFR (Corps For the Future Research center) meeting in Pretoria, South Africa

National Consultant on Seed System- National Center of Research Applied to rural Development FOFIFA, Department of Agronomic Research, Antananarivo, Madagascar. 2013-06/2015

- Provided expertise to the Ministry of Agriculture on seed system law and regulations
- Provided expertise on bean seed system in a partnership with the project MATOY, funded by the Swiss government
- Elaborated draft baseline for the creation of platform involving the stakeholders in common bean seed producers in the region of Vakinankaratra, Itasy

Trainer of trainers in Integrated Pest Management (IPM)- University of Antananarivo, Higher School of Agronomic Sciences, 2012-2013

- Offered trainings on good agronomic practices for controlling plant pests and diseases
- Provided Training on weed management
- Promoted biological controls of crop pest and diseases

Field and greenhouse experiment agent- National Center of Research Applied to rural Development FOFIFA, Department of Agronomic Research, Antananarivo, Madagascar. 2013-06/2015

- In charge of greenhouses
- Designed greenhouse and field experiments (completely randomized design, randomized block design, latin square, split plot, strip plot, multifactorial designs, repeated measure)
- Tracking data for experiments relevant to the common bean breeding program
- Provided expertise to the Ministry of Agriculture on seed system law and regulations
- Provided expertise on bean seed system in a partnership with the project MATOY, funded by the Swiss government

- Elaborated draft baseline for the creation of platform involving the stakeholders in common bean seed producers in the region of Vakinankaratra, Itasy

Program Technician- Plant pathology, National Center of Research Applied to rural Development FOFIFA, Department of Agronomic Research, Antananarivo, Madagascar. 2013-06/2015

- Collecting plant fungi and bacterial strains
- Recording data on the dynamic of important disease pathogens
- Providing list of chemical pesticides to farmers for controlling crop pests and diseases

TEACHING EXPERIENCE

Teaching Assistant in HORT6033- Genetic Techniques in Plant Breeding (Fall 2017).

- Providing theoretical background on PCR, genetic diversity, population structure, QTL mapping, genome-wide association study, and genomic selection
- Providing guidance on using software programs for genetic diversity, population structure, QTL mapping, genome-wide association study, and genomic selection using real data

Teaching Assistant in CEMB 590 V-Special Topics in Cell and Molecular Biology (Fall 2018)

- Providing in-depth theoretical background on the statistics of genome-wide association study and genomic selection
- Developing ready-to-use R scripts for genome-wide association study, and genomic selection using real data

HONOR/GRANTS/AWARDS

- Shi, A. and **W. Ravelombola (co-PI)**, Evaluation, Genome-wide Association Study and Genomic Selection of Salt Tolerance in USDA Cowpea Germplasm, 06/01/2020 – 05/31/2021, a total of \$24,000.
- Shi, A. J. Qin, and **W. Ravelombola (co-PI)**, “Evaluation and Association Analysis of Drought Tolerance in USDA Cowpea Germplasm” from USDA Germplasm Evaluation, 7/1/2019-6/30/2020, a total of \$20,000.
- Krezdorn Award for Excellence in Doctoral Research and Writing (\$200) (2020)
- Outstanding PhD student in Plant Science, Department of Horticulture (2020)
- American Society of Horticultural Science Travel Grant Award (\$500) (2019)
- Maize Genome Annotation Training from Cold Spring Harbor Laboratory (\$1,000) (2019)
- 2018 Norman F. Childers Outstanding Graduate Student Award (\$1,000) (2018)
- American Society of Horticultural Science Travel Grant Award (\$500) (2018)
- 2017-2018 James N. Moore Endowed Fellowship in Horticultural Plant Breeding (\$2,000) (2018)
- Outstanding PhD student in Plant Science, Department of Horticulture (2018)
- Master's thesis Award in the Life Science category at the University of Arkansas, Fayetteville (2017)
- Fulbright grantee, fully-funded scholarship from the US government (2015-2017)
- UF Plant Science Symposium Travel grantee (\$500) (2017)

- Van Duuren Travel grantee (\$1,250) (2016)
- US Borlaug Fellow on Global Food Security for a summer class at Purdue University, Indiana, USA (2016)
- Best student of the Department of Agriculture based on academic achievement and research (2013).
- First award during the competitive exam to enter the Higher School of Agronomic Sciences, University of Antananarivo, Madagascar (2009)
- Best student majoring in science across Madagascar for public Grade 12 exam (2008)
- Second award for public Grade 9 exam across Madagascar (2005)

GRADUATE/UNDERGRADUATE/POST DOC/ VISITING SCIENTIST SUPERVISION AND TRAINING

Post Doc: Dr. Wei Zhou (2017-2018) and Dr. Wu (2017)

- Assisting with data collection
- Providing training on GWAS and GS and advanced statistical analyses
- Assisting with manuscript preparation

Ph.D. students: Auraro Manley (2017-2018), Bazgha Zia (2017-Present), and Wei Yang (2016-2018)

- Providing training on GWAS and GS and other advanced statistical analyses

M.S. students: Fitiavana (2014-2015), Lucia Rajemisa (2014), Mirana (2014), Ravaka (2013), Said (2013)

- Assisting with data collection
- Supervising field, greenhouse, and lab experiments
- Providing assistance with statistical analysis
- Assisting with manuscript preparation

Undergraduate students: Sora Imamura (2017-2019). Jossie Santamaria Archbold (2017-2019)

- Assisting with data collection
- Mentoring undergraduate students on the principles of experimentations
- Supervising field, greenhouse, and lab experiments
- Providing assistance with statistical analysis
- Assisting with manuscript preparation

Visiting scientists: Dr. Lingdi Dong (2017), Dr. Yufeng Yang (2019), and Yuichi Sugihara (2017)

- Assisting with data collection
- Supervising field, greenhouse, and lab experiments
- Providing assistance with statistical analysis
- Assisting with manuscript preparation
- Assisting with response to reviewers for submitted manuscripts

PUBLISHED ABSTRACTS (18 first authors, 15 co-authors)

(1) A Shi, D Olaoye, **WS Ravelombola**, G Bhattarai, H Xiong. 2020. Comparative Transcriptional Characterization for Drought Tolerance in Common Bean.

<https://ashs.confex.com/ashs/2020/meetingapp.cgi/Paper/32874>.

- (2) **Waltram Ravelombola** and Ainong Shi. Variation in Plant Greenness Score, Wilting Status, and Leaf-Related Traits in a Diverse Set of Cowpea Genotypes Under Drought Conditions (<https://ashs.confex.com/ashs/2019/meetingapp.cgi/Person/33030>)
- (3) **Waltram Ravelombola** and Ainong Shi. In Vivo and in Vitro Assessment of Na⁺ and Cl⁻ Contents in Cowpea Under Salt Stress Using Micro Ion Electrodes. (<https://ashs.confex.com/ashs/2019/meetingapp.cgi/Person/33030>)
- (4) **Waltram Ravelombola** and Ainong Shi. Evaluation of Reduction in Plant Height, Stem Diameter, and Chlorophyll Content Among 331 Cowpea Genotypes Under Drought Stress at Early Vegetative Stage (<https://ashs.confex.com/ashs/2019/meetingapp.cgi/Person/33030>)
- (5) **Waltram Ravelombola** and Ainong Shi. Salt Leaf Injury Score and Chlorophyll Content Variation Under Salt Stress in Cowpea Seedlings (<https://ashs.confex.com/ashs/2019/meetingapp.cgi/Person/33030>)
- (6) **Waltram Ravelombola** and Ainong Shi. Variation in Plant Greenness Score, Wilting Status, and Leaf-Related Traits in a Diverse Set of Cowpea Genotypes Under Drought Conditions (<https://ashs.confex.com/ashs/2019/meetingapp.cgi/Person/33030>)
- (7) **Waltram Ravelombola** and Ainong Shi. Variation in Plant Greenness Score, Wilting Status, and Leaf-Related Traits in a Diverse Set of Cowpea Genotypes Under Drought Conditions (<https://ashs.confex.com/ashs/2019/meetingapp.cgi/Person/33030>)
- (8) Ainong Shi, Jun Qin, Yuejin Weng, **Waltram Ravelombola**, Haizheng Xiong, Gehendra Bhattarai, Stephen Eaton, Senyu Chen, Beiquan Mou. Enhancement of Cowpea Breeding through Molecular Breeding in Cowpea. ASA, CSSA and SSSA International Annual Meetings (2019)
- (9) Yufeng Yang, Qirui Cui, Jun Qin, **Waltram Ravelombola**, Gehendra Bhattarai, Bazgha Zia, Olaoye Dotun Samuel, Sora Imamura, Jossie Santamaria Archbold, Ainong Shi. Evaluation of Drought Tolerance in Common Bean at Seedling Stage. ASA, CSSA and SSSA International Annual Meetings (2019)
- (10) Jun Qin, Ainong Shi, James Correll, Carlos A. Avila, Chunda Feng, Bo Liu, Gehendra Bhattarai, Bazgha Zia and **Waltram Ravelombola**. Genome-Wide Association Study and Genomic Selection for White Rust Resistance in Spinach (<https://ashs.confex.com/ashs/2019/meetingapp.cgi/Person/33030>)
- (11) **Waltram Ravelombola**, Jun Qin, Yuejin Weng, Gehendra Bhattarai, and Ainong Shi. 2017. Evaluation of Drought Tolerance in Cowpea [*Vigna unguiculata* (L.) Walp]. SR-ASHS conference on Feb. 4-6 in Jacksonville, FL. (<http://www.srashes.org/Awards/Awards.html>)
- (12) **Waltram Ravelombola**, Yuejin Weng, and Ainong Shi. 2017. Gas Exchange, Intrinsic Water Use Efficiency, Chlorophyll Content, and Biomass Allocation in Cowpea [*Vigna unguiculata* (L.) Walp] Seedlings Under Varying Salt Concentrations. SR-ASHS conference on Feb. 4-6 in Jacksonville, FL. (<http://www.srashes.org/Awards/Awards.html>)
- (13) **Waltram Ravelombola**, Yuejin Weng, and Ainong Shi. 2017. A Simple Methodology to Screen Cowpea [*Vigna unguiculata* (L.) Walp] Genotypes for Salt Tolerance at Seedling Stage. SR-ASHS conference on Feb. 4-6 in Jacksonville, FL. (<http://www.srashes.org/Awards/Awards.html>)
- (14) **Ravelombola, W.**, J. Qin, A. Shi, J.C. Miller, Jr., D. Scheuring, Y. Weng, G. Bhattarai, L. Dong, and W. Yang, 2017. Association Analysis for Iron Deficiency Chlorosis Tolerance in Cowpea [*Vigna unguiculata* (L.) Walp]. SR-ASHS conference on Feb. 4-6 in Jacksonville, FL. (<http://www.srashes.org/Awards/Awards.html>)

- (15) **Waltram Ravelombola**, Jun Qin, Ainong Shi, Yuejin Weng, Gehendra Bhattarai, Lingdi Dong, and J. Bradley Morris. 2017. Association Analysis for Plant Growth Habit in Cowpea (*Vigna unguiculata* (L.) Walp). SR-ASHS conference on Feb. 4-6 in Jacksonville, FL. (<http://www.srashes.org/Awards/Awards.html>)
- (16) Ainong Shi, Jun Qin, Yuejin Weng, Gehendra Bhattarai, **Waltram Ravelombola**, Bazgha Zia, Wei Zhou, Jim Correll, and Beiquan Mou. Genetic Diversity and Genome-wide Association Study in Spinach. SR-ASHS conference on Feb. 4-6 in Jacksonville, FL. (<http://www.srashes.org/Awards/Awards.html>)
- (17) Yuejin Weng, Jun Qin, Gehendra Bhattarai, Waltram Ravelombola, Bazgha Zia, Wei Zhou, and Ainong Shi. Study on Photoperiodism in Spinach (*Spinacia oleracea* L.). SR-ASHS conference on Feb. 4-6 in Jacksonville, FL. (<http://www.srashes.org/Awards/Awards.html>)
- (18) Yuejin Weng, Jun Qin, **Waltram Ravelombola**, Gehendra Bhattarai, Lingdi Dong, Wei Yang, and Ainong Shi. Evaluation of Soluble Sugar Content in Cowpea Seeds. SR-ASHS conference on Feb. 4-6 in Jacksonville, FL. (<http://www.srashes.org/Awards/Awards.html>)
- (19) Ainong Shi, Jun Qin, Beiquan Mou, Yuejin Weng, **Waltram Ravelombola**, Haizheng Xiong, and Gehendra Bhattarai. Genetic Diversity, Population Structure and Genome-wide Association Study in Cowpea. (<http://www.srashes.org/Awards/Awards.html>)
- (20) **Waltram Ravelombola**, Ainong Shi, Yuejin Weng, Beiquan Mou, Dennis Motes, John R. Clark, Pengyin Chen, Vibha Srivastava, Jun Qin, Lingdi Dong, Wei Yang, Gehendra Bhattarai and Yuichi Sugihara. 2017. Evaluation of Association Analysis of Salt Tolerance in Cowpea. 2017 ASHS Annual Meeting, September 19-22, Waikoloa, Hawaii, USA. <https://ashes.confex.com/ashes/2017/meetingapp.cgi/Paper/26826>
- (21) **Waltram Second Ravelombola**, Yuejin Weng, Dennis Motes, and Ainong Shi. 2016. Evaluation of Salt Tolerance at Germination Stage in USDA Cowpea Germplasm (<https://ashes.confex.com/ashes/2016/webprogram/Paper23603.html>).
- (22) **Waltram Second Ravelombola**, Yuejin Weng, Dennis Motes, Clay Wingfield, and Ainong Shi. 2016. Evaluation of total seed protein content in eleven Arkansas cowpea genotypes (<https://ashes.confex.com/ashes/2016/webprogram/Paper23668.html>).
- (23) **Waltram Second Ravelombola**, Yuejin Weng, Dennis Motes, Clay Wingfield, and Ainong Shi. 2016. Evaluation of cowpea salt tolerance. Presented during the Biology Department Seminar on Sept 7, 2016, MEM 242, University of Arkansas, Fayetteville, AR.
- (24) **Waltram Second Ravelombola**, Yuejin Weng, Dennis Motes, Clay Wingfield, and Ainong Shi. 2016. Variability of protein content in cowpea. Presented during the Global Food Security Workshop, on August 5-18 in West Lafayette, Purdue University, IN.
- (25) **Waltram Ravelombola**, Ainong Shi, Yuejin Weng, Beiquan Mou, Dennis Motes, John Clark, Pengyin Chen, Vibha Srivastava, Jun Qin, Lingdi Dong, Wei Yang, Gehendra Bhattarai, and Yuichi Sugihara. Evaluation an Association Mapping for Cowpea Salt Tolerance. Presented during the Plant Science Symposium in Florida, on April 13, 2017, Gainesville, FL.
- (26) **Waltram Ravelombola**, Ainong Shi, Yuejin Weng, Beiquan Mou, Dennis Motes, John Clark, Pengyin Chen, Vibha Srivastava, Jun Qin, Lingdi Dong, Wei Yang, Gehendra Bhattarai, and Yuichi Sugihara. Evaluation and Association Mapping for Cowpea Salt Tolerance Using a Genotyping-By-Sequencing Approach. Presented on February 15, 2017 during the Horticulture Seminar, University of Arkansas, Fayetteville, AR.
- (27) Ainong Shi, Jun Qin, Yuejin Weng, Beiquan Mou, Senyu Chen, **Waltram Ravelombola**, Dennis Motes, Haizheng Xiong, Lingdi Dong, Wei Yang, and Gehendra Bhattarai. 2017.

Genome-wide Association Study (GWAS) in Cowpea (Submitted to ASA, CSSA & SSSA International Annual Meetings: Oct. 22-25, 2017, Tampa, FL, USA).

(28) Jun Qin, Ainong Shi, Beiquan Mou, Michael A. Grusak, Jim Correll, Yuejin Weng, Dennis Motes, Lingdi Dong, Wei Yang, Gehendra Bhattarai, **Waltram Second Ravelombola**, Haizheng Xiong and Jianbing Ma. 2017. Genetic Diversity and Association Analysis of Mineral Components in Spinach. 2017 ASHS Annual Meeting, September 19-22, Waikoloa, Hawaii, USA. <https://ashs.confex.com/ashs/2017/meetingapp.cgi/Paper/26830>

(29) Ainong Shi, Jun Qin, Beiquan Mou, Jim Correll, Yuejin Weng, Chunda Feng, Dennis Motes, Wei Yang, Gehendra Bhattarai, **Waltram Second Ravelombola**, Lingdi Dong and Yuichi Sugihara. 2017. Genome-Wide Association Study Using Next Generation Sequencing in Spinach. 2017 ASHS Annual Meeting, September 19-22, Waikoloa, Hawaii, USA. <https://ashs.confex.com/ashs/2017/meetingapp.cgi/Paper/26828>

(30) Ainong Shi, Jun Qin, Yuejin Weng, **Waltram Ravelombola**, Dennis Motes, Haizheng Xiong, Lingdi Dong, Wei Yang, Gehendra Bhattarai and Beiquan Mou. 2017. Whole Genome Sequencing and Resequencing for Genome-Wide Study in Cowpea. 2017 ASHS Annual Meeting, September 19-22, Waikoloa, Hawaii, USA. <https://ashs.confex.com/ashs/2017/meetingapp.cgi/Paper/26827>

(31) Gehendra Bhattarai, Jun Qin, Yuejin Weng, L. John Bradley Morris, **Waltram Ravelombola**, Wei Yang, and Ainong Shi. 2017. Association analysis of cowpea mosaic virus resistance in the USDA cowpea germplasm collection (Submitted to The National Association of Plant Breeders (NAPB) 2017 Annual Meeting, August 7-10, 2017, University of California, Davis, CA, USA).

(32) Yuejin Weng, David Octor Moseley, Wei Yang, **Waltram Second Ravelombola**, Jun Qin, Dennis Motes, Pengyin Chen, and Ainong Shi. 2016. Evaluate Two Methods for Measuring Cowpea Seed Protein Content (<https://ashs.confex.com/ashs/2016/webprogram/Paper23601.html>).

(33) Yuejin Weng, Ainong Shi, David Octor Moseley, Wei Yang, **Waltram Second Ravelombola**, Jun Qin, Dennis Motes, and Pengyin Chen. 2016. Evaluation of seed sucrose content in cowpea (<https://ashs.confex.com/ashs/2016/webprogram/Paper24778.html>).

CONFERENCES AND PRESENTATION

(1). **Waltram Ravelombola**. 2020. Conventional and Molecular Breeding in Cowpea. Soil and Crop Sciences Department seminar series, Texas A&M, 09/30/2020 (Presentation via zoom with 51 attendees)

NON-REFEREED/TECHNICAL REPORTS

(1) Andriamazaoro Herimihamina, Aimée Rabakoariahanta, Second Modeste Velombola, **Waltram Second Ravelombola**, and Colombe Razanadrakoto. 2016. Analysis of the major issues across the common bean value chain in the region of Menabe, Madagascar.

(2) **Waltram Second Ravelombola**, Herimihamina Andriamazaoro, Second Modeste Velombola, and Aimée Rabakoariahanta. 2015. Common bean seed production and system. (http://www.fofifa.mg/crrhps_informations.php)

- (3) **Waltram Second Ravelombola**, Herimihamina Andriamazaoro, Second Modeste Velombola, and Aimée Rabakoarihanta. 2014. Draft baseline for the potential of underutilized crops in Madagascar.
- (4) **Waltram Second Ravelombola**, Aimée Rabakoarihanta, and Herimihamina Andriamazaoro. 2014. Assessment of the impact of gamma irradiation on Bambara groundnuts (*Vigna Subterranea*) for a better tolerance to drought and resistance to powdery mildew.
- (5) **Waltram Second Ravelombola**, Rafalimana Halitiana, Fidele Randriamarolahy, Herimihamina Andriamazaoro, Danny Coyne, Joelson Victor Rakotondramanana, Second Modeste Velombola, and Aimée Rabakoarihanta. 2014. Identification of the major biotic limiting tomato production in the areas surrounding Antananarivo, Madagascar.
- (6) **Waltram Second Ravelombola**, Rafalimana Halitiana, Fidele Randriamarolahy, Herimihamina Andriamazaoro, Danny Coyne, Joelson Victor Rakotondramanana, Second Modeste Velombola, and Aimée Rabakoarihanta. 2014. Screening tomato genotypes for resistance to early blight, bacterial blight, and root-knot nematodes.
- (7) **Waltram Second Ravelombola**, Rafalimana Halitiana, Herimihamina Andriamazaoro, Aimée Rabakoarihanta, Second Modeste Velombola, and Joelson Victor Rakotondramanana. 2013. Adaptation trials for micronutrient rich beans in Madagascar.

PROFESSIONAL MEMBERSHIP

American Society of Horticultural Science (2016-Present)
 American Society of Agronomy (2017-Present)
 Crop Science Society of America (2017-Present)
 Soil Science Society of America (2017-Present)
 Pan-African Bean Research Alliance (2011- Present)
 Agronomist Engineer Association of Madagascar (2013-Present)

INTERNSHIP/WORKSHOP

Internship/Workshop	Institute	
Oxford Nanopore sequencing	University of Arkansas, Fayetteville	07/2017
CyVerse Database Training	University of Arkansas, Fayetteville	07-2017
Annual meeting for the American Society of Horticultural Science (ASHS)	ASHS*	08/2016
Annual meeting on plant imaging consortium	University of Arkansas, Fayetteville, USA	07/2016
US Borlaug fellowship on global food security	Purdue University, Indiana USA	06/2016
Major threat for food safety and trade within the SADC region in Africa	FAO*, Antananarivo, Madagascar	02/2016
Tomato breeding and genetics	FOFIFA_DRA*, Antananarivo, Madagascar	04/2013-06/2015
Common bean breeding and genetics	FOFIFA_DRA*, Antananarivo, Madagascar	08/2012-06/2015
Biological control of tomato pests and diseases	IITA-Real IPM	11/2014
Mutation Induction and In Vitro Techniques	IAEA* Pretoria, South Africa	07/2014
Organic agriculture processes	ESSA*, University of Antananarivo, Madagascar	06/2013

Workshop for common bean breeders	CIAT/PABRA/ECABREN*, Kampala, Uganda	05/2013
Plant pathology laboratory	FOFIFA_DRA*, Antananarivo, Madagascar	01/2012-04/2012
Common bean pathology	CIAT/PABRA/ECABREN*, Kampala, Uganda	05/2011
Village monography I in Ankazomiriotra	ESSA*, University of Antananarivo, Madagascar	06/2011-07/2011
Training for agricultural technicians	VOTETA*	12/2011
Crop protection	FOFIFA_DRA*, Antananarivo, Madagascar	06/2011-07/2011
Village monography II in Ankazomiriotra	ESSA*, University of Antananarivo, Madagascar	09/2010-10/2010
Analysis and structure of the rural area in Behenja, Madagascar	ESSA*, University of Antananarivo, Madagascar	06/2009-07/2009

*ASHS: American Society of Horticultural Science

FAO: Food and Agriculture Organization

FOFIFA_DRA: National Center of Research Applied to Rural Development_Department of Agronomic Research

IITA: International Institute of Tropical Agriculture

Real_IPM: Real Integrated Pest Management

IAEA: International Atomic Energy Agency

CIAT: International Research Center for Tropical Agriculture

PABRA: Pan African Bean Research Alliance

ECABREN: Eastern and Central Africa for Bean Research Network

ESSA: Higher School of Agronomic Sciences, University of Antananarivo, Madagascar

VOTETA: Agricultural Technician Center

VOLUNTEERISM

- Moderator of the Vegetable Breeding Section during the 2019 American Society of Horticultural Science Conference, Las Vegas, Nevada (2019)
- Judge member during the Northwest Arkansas Regional Science and Engineering Fair (2017, 2016)
- Pianist during Sunday mass at St.Thomas Aquinas, Fayetteville, AR, USA (2015-Present)
- Active members for the celebration of International Week Education, University of Arkansas, Fayetteville, USA: (2016)
- Participant in the Bread for life charity activities aiming at providing food for street people in Seattle, Washington (2016).