

# Kieu N. Le

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Kieu Le is a modeler and an educator who specializes in field- and watershed-scale modeling to evaluate the impacts of on-farm management decisions on soil organic carbon sequestration, crop productivity and water quality. Her interest is also in conservation agriculture, and data analysis.

## EDUCATION

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### **PhD. in Energy and Environmental Systems**, GPA 4.0, 2017

North Carolina Agricultural and Technical State University (NCAT), NC, USA.

Dissertation: Soil organic carbon modeling with the EPIC model for conservation agriculture and conservation tillage practices in Cambodia.

### **Master of Science in Plant Soil and Environmental Science**, NCAT, GPA 3.67, 2011

Thesis: Evaluation of the APEX model for organic and conventional management under conservation and conventional tillage systems.

### **Bachelor of Engineering in Hydraulic Engineering**, Can Tho University, Vietnam, 2007.

### **Bachelor of Science in Education and Foreign Language (English)**, Can Tho University, 2006.

## TEACHING EXPERIENCE

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**Teaching Assistant Professor**, Department of Biological and Agricultural Engineering, University of Arkansas, Fayetteville (7/2019-present).

**Instructor**, Department of Biological and Agricultural Engineering, University of Arkansas, Fayetteville (12/2017-6/2019).

- Undergraduate course taught: BENG 2643 - Biological Engineering Method I, BENG 3663 - Biological Engineering Method II, BENG 4743 - Food and Bio-product Systems Engineering, BENG 4823 – Senior Biological Engineering II (senior design), BENG 451VH – Honors Thesis.
- Graduate course taught: BENG 5703 - Design and Analysis of Experiments for Engineering, BENG 5923 – Nonpoint source pollution control and modeling.
- Service activities: Academic advisor for 14 students, Master committee member for Sana Ajaz in Civil Engineering and Jacob A Hickman in BENG Department. Secondary advisor of Vietnamese Student Association at UARK.

**Teaching Assistant**, Chemistry Department, NCAT, 50 students/ semester (8/2016- 5/2017)

- Taught undergraduate course Physical Science Laboratory (responsible for teaching, lesson plans, and grading).

**Modeling training**, BioE, NCAT, total 55 students (1/2012- 5/2017 )

- The Soil and Water Assessment Tool (SWAT) model for CAEE 364 Engineering Hydrology.
- The APEX and EPIC model for undergraduate courses: General Hydrology, Water Resource Engineering, Ecology Engineering & Food Systems, Soil & Water Conservation Engineering.

**Field-work training** NC local K3 to K12 schools, total 480 students (1/2012- 8/2015)

- Constructed “oasissofa” bed-CA in urban landscape, planting, soil testing.
- Taught K3 CA and hands-on planting, taking care of vegetables and harvesting.

**Supervising and leadership**, BioE, NCAT, total 40 students (1/2012- 8/2015)

- Supervised undergraduate and graduate students working in Natuculture systems to enhance urban sustainability, high school students in the Research Apprentice Program.

- Team leader in urban-kitchen garden “oasissofa” study at NCAT, and 9 local schools in NC.

**Lecturer**, Can Tho University, 45 to 59 students/ class (9/2006- 12/2009)

- Taught undergraduate courses: General English, Hydraulic & Hydrology Laboratory, Mapping & GIS, Fluid Mechanics, and English for Environmental Engineering.
- Academic advisor for undergraduate students in Environmental Engineering K34, total 49 students.

## **RESEARCH EXPERIENCE**

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**Research Scholar**, NCAT (5/2017- 11/2017)

- Write peer-reviewed papers for SOC, total nitrogen, crop yield and biomass simulation under conservation agriculture (CA) and conservation tillage management and climate change impacts, using the Environmental Policy Integrated Climate (EPIC) model.
- Improve Agricultural Policy/Environmental eXtender (APEX) model simulation for vegetable production with organic inputs.

**Research Assistant**, NCAT (1-6/2016)

- Relocated to Texas AgriLife Blackland Research & Extension Center (BREC) as a Research Scholar to work closely with Dr. Jeong and Dr. Kiniry team.
- Calibrated and validated the EPIC model on soil organic carbon, crop yield, and biomass.
- Developed new crop parameters for EPIC: cassava, sesame, banana, stylosanthes, and congo grass.
- Learned Fortran source code of the EPIC model.

**Research Assistant**, Biological Engineering Department (BioE), NCAT (10/2010 - 6/2016)

- Funded from USDA NIFA (SPECA, 1890 Capacity Building Grant, NCSU, and Evans-Allen).
- Simulated crop yield, surface runoff, and water quality using the APEX model.
- Integrated CA, tilled, no-tilled, and drip irrigation to study the provision of fresh, chemical-free foods in urban landscapes through the application of urban-kitchen garden “oasissofa” study at NCAT, and 9 local schools.
- Conducted plot experiments to study the effects of CA, and drip irrigation with and without high tunnel, and agroforestry.
- Tested chemical, physical and biological soil properties and water quality.
- Collaborated and assisted BioE and early STEM students to develop floating island proposal.
- Processed travel and payroll paperwork, recruited students working in Natuculture systems.
- Assisted project director in developing, writing, and submitting grant proposals.
- Managed web content for Natuculture systems.

**Project secretary and technician**, Can Tho University (9/2007-12/2009)

- Developed 3 m scale landuse map, GPS surveying and mapping, and water quality sampling
- Completed participatory rural appraisal (PRA) on impact assessment, adaptation capacity and vulnerability to climate change for Challenge to Change project.

## **PEER-REVIEW PUBLICATIONS**

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- Minh, H. V. T., Kurasaki, M., Van Ty, T., Tran, D. Q., **Le, K. N.**, Avtar, R., Rahman, M. M., & Osaki, M., (2019). Effects of Multi-Dike Protection Systems on Surface Water Quality in the Vietnamese Mekong Delta. *Water* 11, 1010.
- **Le, K. N.**, Jeong, J., Reyes, M. R., Jha, M. K., Gassman, P. W., Doro, L., Hok, L., & Boulakia, S. (2018). Evaluation of the performance of the EPIC model for yield and biomass simulation under conservation systems in Cambodia. *Agricultural Systems*, 166, 90-100. doi: <https://doi.org/10.1016/j.agsy.2018.08.003>.

- **Le, K. N.**, Jha, M. K., Jeong, J., Gassman, P. W., Reyes, M. R., Doro, L., Tran, D. Q., & Hok, L. (2018). Evaluation of Long-Term SOC and Crop Productivity within Conservation Systems Using GFDL CM2.1 and EPIC. *Sustainability*, 10(8), 2665. doi: <https://doi.org/10.3390/su10082665>.
- **Le, K. N.**, Jha, M. K., Reyes, M. R., Jeong, J., Doro, L., Gassman, P. W., Hok, L., Boulakia, S., & Sá, J. C. d. M. (2018). Evaluating carbon sequestration for conservation agriculture and tillage systems in Cambodia using the EPIC model. *Agriculture, Ecosystems & Environment*, 251, 37-47. doi: <https://doi.org/10.1016/j.agee.2017.09.009>.

## CONFERENCE PRESENTATIONS

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- Nut, N., Reyes, M. R., Sigua, G. C., Doro, L., Worqlul, A. W., Jeong, J., Srinivasan, R., **Le, K. N.**, Ly, S., Tivet, F., Leng, V., Lor, L., Chan, S., & Sous, V. (2019). Evaluation of soil carbon sequestration in conservation agriculture production and tillage systems in Cambodia using SWAT. ASABE Annual International Meeting, Jul. 7–10, 2019, Boston, MA.
- **Le, K. N.**, Jha, M. K., Jeong, J., Reyes, M. R., & Gassman, P. W. (2017). Climate change impact on soil organic carbon and crop yield under conservation tillage and conservation agriculture: An EPIC application. ASABE Annual International Meeting, Jul. 16–19, 2017, Spokane, WA.
- **Le, K. N.** and Jha, M. K. (2017). Experimental and modeling evaluation of soil organic carbon (SOC) for complex cropping systems under current and future climatic conditions. The 6<sup>th</sup> Annual College of Engineering Graduate Research Poster Competition at NCAT Apr. 27, 2017, Greensboro, NC.
- **Le, K. N.**, Jha, M. K., Jeong, J., Reyes, M. R., & Gassman, P. W. (2017). Simulating impact of future climate on soil organic carbon and crop yield under conservation tillage and conservation agriculture using EPIC. NAEP Annual Conference, Mar. 27–30, 2017, Durham, NC.
- **Le, K. N.**, Reyes, M. R., Jeong, J., & Hok, L. (2016). Soil organic carbon modeling using the EPIC model for conservation agriculture and conventional tillage systems in Kampong Cham, Cambodia. ASABE Annual International Meeting, Jul. 17–20, 2016, Orlando, FL.
- **Le, K. N.**, & Reyes, M. R. (2015). Soil organic carbon simulation by using the APEX model for organic and chemical management under conservation and conventional tillage systems. 70<sup>th</sup> SWCS International Annual Conference, Jul. 26–29, 2015, Greensboro, NC.
- Reyes, M. R., **Le, K. N.**, Gayle, G., Edralin, D. I., Hok, L., & Tran, D. Q. (2014). Agroforestry and high tunnel effects on vegetable yield at local farms in North Carolina. ASABE & CSBE | SCGAB Annual International Meeting, Jul. 13–16, 2014, Montreal, QC, Canada.
- Edralin, D. I., Reyes, M. R., **Le, K. N.**, Hok, L., Tran, D. Q., Creason, S., Lewis, L. Q., Nkrumah, K. K., & Gayle, G. (2014). Conservation agriculture Oasissofa's for urban homes in North Carolina. ASABE & CSBE | SCGAB Annual International Meeting, Jul. 13–16, 2014, Montreal, Canada.
- **Le, K. N.**, & Reyes, M. R. (2013). Conceptual modification carbon sequestration component in the EPIC model for long-term simulation of conservation agriculture. ASABE, Jul.21–24, 2013, Kansas, MO.
- Tran, D. Q., Kurkalova, L. A., Reyes, M. R., Line, D., Hoyt, G., Osmond, D., **Le, K. N.**, & Edgell, J. (2013). Cost-effectiveness analysis of agricultural pollution reduction at the farm scale using APEX. ASABE Annual International Meeting, Jul. 21–24, 2013, Kansas, MO.
- **Le, K. N.**, Reyes, M. R., Hok, L., Edralin, D. I., & Williams, M. (2013). Natuculture: Experimental learning system. 17<sup>th</sup> Biennial Research Symposium, Apr. 7–10, 2013, Jacksonville, FL.
- Williams, M., Tran, D. Q., Edralin, D. I., **Le, K. N.**, Reyes, M. R., Yeboah, A. & Hok, L. (2013). Natuculture: The benefits of practicing conservation agriculture in urban landscapes. Third prize poster presentation in the 17<sup>th</sup> Biennial Research Symposium, Apr. 7–10, 2013, Jacksonville, FL.

- Edralin, D. I., Hok, L., **Le, K. N.**, Gayle, G. A., Raczkowski, C. W., & Reyes, M. R. (2012). Urban conservation agriculture for food deserts. ASA, CSSA, and SSSA International Annual Meetings, Oct. 21–24, 2012, Cincinnati, OH.
- Reyes, M. R., Gruber, F.K., McDaniel, R., Abraha, A., **Le, K. N.**, Edralin, D. I., Hok, L., Creason, S., & Williams, M. (2012). Cultivating students in STEM through Natuculture. K12 Conference, Oct. 2012, Raleigh, NC.
- **Le, K. N.**, Reyes, M. R., Hoyt, G., Osmond, D., Steglich, E., & Williams, J. (2012). Evaluating the APEX model for organic vegetable production. [ASABE International Meeting](#), Jul. 29–Aug. 1, 2012, Dallas, TX.
- Reyes, M. R., **Le, K. N.**, Edralin, D. I., & Hok, L. (2012). Natuculture: Biomimicry in urban landscapes. ASABE Annual International Meeting, Jul. 29–Aug. 1, 2012, Dallas, TX.
- Reyes, M. R., **Le, K. N.**, Edralin, D. I., Idassi, J., & Gayle, G. (2012). Combining high tunnel and agroforestry technologies for vegetable production in small farms in NC. ASABE, Jul. 29–Aug. 1, 2012, Dallas, TX.
- **Le, K. N.** & Reyes, M. R. (2011). Evaluation of the APEX model for organic and conventional management under conservation and conventional tillage systems. ASABE, Aug. 7–10, 2011, Louisville, KY.
- **Le, K. N.**, Reyes, M. R., Hoyt, G., & Steglich, E. (2011). Evaluation of the APEX model for organic and conventional management under conservation and conventional tillage systems. International SWAT Conference, Jun. 15–17, 2011, Toledo, Spain.
- **Le, K. N.**, Suda, K. R., & Reyes, M. R. (2010). Water quality assessment on organic plots under conventional and conservation tillage in the Upper French Broad watershed with APEX model. TMDL: Watershed Management to Improve Water Quality, Nov.14–17, 2010, Baltimore, MD.
- Suda, K. R., **Le, K. N.**, & Reyes, M. R. (2010). Modeling streamflow with SWAT in the Upper Haw River of NC. TMDL: Watershed Management to Improve Water Quality, Nov.14–17, 2010, Baltimore, MD.

## **REVIEWER**

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- Reviewer for MDPI: *Agronomy* (3 & 5/2019), *Agriculture* (4/2019), *IJERPH* (5/2019)
- Reviewer for *Soil and Tillage Research Journal* (5/2019, 12/2018).
- Lead judge in North West Arkansas Regional Science and Engineering Fair (3 & 4/2019)
- Reviewer for *Journal Agronomy Research* (3/2019).
- Review Center of Excellence on Sustainable Agricultural Intensification and Nutrition (CE SAIN) research grant (9/2018).
- Abstract reviews for the First International Sustainable Agricultural Intensification and Nutrition (SAIN) Conference (11/2017).

## **COMMITTEE MEMBER**

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- SWAT-SEA 2019 Science Committee Members, Siem Reap, Cambodia 10/21-26, 2019
- Honors thesis advisor of Jaden Tally, obtained B.S in Biological and Agricultural Engineering 5/2019, thesis titled “Simulating Delayed Flood and Alternate Wetting and Drying Rice Production in Arkansas Using APEX”.
- Master committee member of Sana Ajaz, obtained Master of Science in Civil Engineering 12/2018, thesis titled “Assessing Biofiltration without Ozonation for Removal of Trihalomethane Precursors in Drinking Water at the Beaver Water District Drinking Water Treatment Plant”.
- Master committee member of Jacob A Hickman, Andrew Shaw ongoing research.

## **COMPUTER SKILLS**

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- Process-based models: WinEPIC, WinAPEX, ArcAPEX, SWAT, ArcSWAT, MWSWAT.
- Geographic information systems (GIS): ArcGIS, Map-Info, remote sensing, GPS, GRASS-GIS.
- Hydrodynamic models: MODFLOW, MIKE 11.
- Others: AutoCAD, SAS, JMP, Matlab, R, Microsoft Offices (MS Visio).

## **TRAINING & CERTIFICATES**

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- APEX and EPIC training at Texas AgriLife BREC (3/2011 and 8/2015).
- SWAT model training at Nong Lam University, 1/2009 and 11/2009.
- Geospatial Data and Remote Sensing Application, German Remote Sensing Data Center, University of Würzburg, Germany and HCMIRG – GIRS (VAST), Vietnam, 3/2009.
- Climate change analysis workshop and training, reviewed the future climate projection data and used ArcGIS to analyze potential risk from climate change in Mekong River Delta, Bangkok, Thailand, 2/2009.
- Mike 11 model by IWRM project, Can Tho University, Vietnam, 11/2008.
- Water resources planning & management, modeling for environment management, integrated catchments management, and water trading by ICE WaRM Professional Development Program; groundwater science, technology and management by 35th – An Australian Groundwater School; groundwater modeling using MODFLOW by 9th Groundwater Modeling School; Australia, 2008.

## **ACADEMIC HONORS & SCHOLARSHIPS**

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- 2015 Honorable mentioned P3 for floating island proposal, 4/2015.
- Wadaran Latamore Kennedy 4.0 GPA scholar, 4/3/2013.
- Scholarly Accomplishments and Excellence in Academic Performance, 4/2012.
- Academic Excellence Award by School of Agriculture and Environmental Sciences, 4/15/2011.
- Scholarly Accomplishments and Excellence in Academic Performance, 4/27/2011.
- Graduate scholarships: NCAT (\$25,790), 1/2012 – 5/2017, NSF ethics (\$1,195; 8 – 12/2014), USDA. NIFA (SPECA and NCSU) (\$40,200; 1/2011 – 5/2014), and Can Tho University (\$27,500; 2010).

## **SCIENTIFIC MEMBERSHIPS**

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- ASABE: American Society of Agricultural and Biological Engineers.