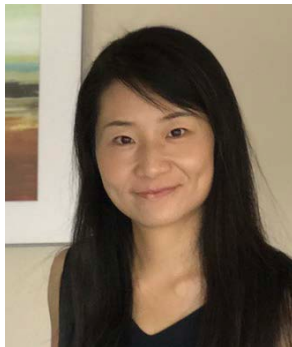


## NA LU (PhD)

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### **Work experience**

*2015- present*

#### **Chiba University, Assistant Professor**

Research on environmental control technologies for promoting plant growth and quality on leafy vegetables and medicinal plants grown in plant factory. Especially about LED lighting applications in artificial lighting plant factories.

*2012-2015*

#### **Philips Horticulture LED Solutions, Plant Specialist Asia**

Responsible for LED light recipe development and research on various crops in Asia Pacific Region. Focused on LED light applications for various crops cultivated in plant factory, greenhouse, and tissue culture labs, to improve plant growth, production, flowering control, and energy saving.

*2009-2012*

#### **Chiba University, PhD Research Project**

Application of supplemental lighting with LEDs to improve the tomato yield and quality of single-truss tomato plants grown at high planting density

### **Recent publications**

1. T. Hang, N. Lu, M. Takagaki, H.P. Mao. 2019. Leaf area model based on thermal effectiveness and photosynthetically active radiation in lettuce grown in mini-plant factories under different light cycles. *Scientia Horticulturae*, 252: 113-120. <https://doi.org/10.1016/j.scienta.2019.03.057>
2. M. Kitayama, N. Lu, D. T.P. Nguyen, M. Takagaki. 2019. Effect of light quality on physiological disorder, growth and secondary metabolite content of water spinach (*Ipomoea aquatica* Forsk) cultivated in closed-type plant production system. *Korean Journal of Horticultural Science & Technology*.
3. N. Lu, M. Takagaki, W. Yamori, N. Kagawa. 2018. Flavonoid productivity optimized for green and red forms of *perilla frutescens* via environmental control technologies in plant factory. *Journal of Food Quality*, <https://doi.org/10.1155/2018/4270279>.
4. J. Khwankaew, D.T. Nguyen, N. Kagawa, M. Takagaki, G. Maharjan, N. Lu. 2018. Growth and Nutrient Level of Water Spinach (*Ipomoea aquatica* Forsk) in Response to LED Light Quality in Plant Factory. *Acta Horticulturae* 1227: 653-660.
5. S. Saengtharapip, N. Lu, M. Takagaki. 2018. Supplemental upward LED lighting for growing romaine lettuce (*Lactuca sativa*) in plant factory: Cost performance by light intensity and different light spectra. *Acta Horticulturae* 1227: 623-630.
6. Q. Yang, N. Lu, L. Wang, XQ. Huang, DQ. Yang, J. Sun. 2018. Exogenous spermidine promoted Ca<sup>2+</sup> absorption in lettuce roots and reduced incidence of tipburn. *Korean Journal of Horticultural*

*MU-CU Joint Symposium 2019: Integrated Horticulture for Better Quality of Life*

*10<sup>th</sup> May 2019, Faculty of Science, Mahidol University, Bangkok, the Kingdom of Thailand*

- Science & Technology, 36(5), 702-712. <https://doi.org/10.12972/kjhst.20180070>
7. S. Saengtharapit, N. Lu, M. Takagaki, M. Kikuchi. 2018. Productivity and cost performance of lettuce production in a plant factory using various light-emitting-diodes of different spectra. *Journal of ISSAAS (International Society for Southeast Asian Agricultural Sciences)*, 24(1), 1-9
  8. Wang LW., Zhou H., Guo S., An Y., Shu S., Lu N., Sun J. 2018. Exogenous spermidine maintains the chloroplast structure of cucumber seedlings and inhibits the degradation of photosynthetic protein complexes under high temperature stress. *Acta Physiologiae Plantarum*, 40: 47.
  9. Wang Y., Guo S., Wang L., Wang LW., He XY., Shu S., Sun J., Lu N. 2018. Identification of microRNAs associated with the the regulation of exogenous spermidine-mediated improvement of high temperature tolerance in cucumber seedlings (*Cucumis sativus* L.). *BMC Genomics*, 19: 285.
  10. Yang Q., Lu N., Wang L., Huang XQ., Yang DQ., Sun J. 2018. Exogenous spermidine promoted Ca<sup>2+</sup> absorption in lettuce roots and reduced incidence of tipburn. *Korean Journal of Horticultural Science & Technology*.
  11. Saengtharapit S., Lu N., Takagaki M., Kikuchi M. 2018. Productivity and cost performance of lettuce production in a plant factory using various light-emitting-diodes of different spectra. *International Society for Southeast Asian Agricultural Sciences*.
  12. Lu N., Bernardo E. L., Tippayadarapanich C., Takagaki M., Kagawa N., Yamori W. 2017. Growth and Accumulation of Secondary Metabolites in *Perilla* as Affected by Photosynthetic Photon Flux Density and Electrical Conductivity of the Nutrient Solution, *Frontiers in Plant Science*. doi:[10.3389/fpls.2017.00708](https://doi.org/10.3389/fpls.2017.00708)
  13. Xu Y., Guo S., Li H., Sun H., Lu N., Shu S., Sun J. 2017. Resistance of Cucumber Grafting Rootstock Pumpkin Cultivars to Chilling and Salinity Stresses. *Korean Journal of Horticultural Science & Technology*, 35(2): 220-231.
  14. Sun J., Lu N., Xu H., Maruo T., Guo S. 2016. Root zone cooling and exogenous Spermidine root-pretreatment promoting *Lactuca sativa* L. growth and photosynthesis in the high-temperature season. *Frontiers in Plant Science*, 7: Article 368. doi: [10.3389/fpls.2016.00368](https://doi.org/10.3389/fpls.2016.00368)
  15. Tewolde F. T., Lu N., Shiina K., Maruo T., Takagaki M., Kozai T., Yamori W. 2016. Nighttime supplemental LED inter-lighting improves growth and yield of single-truss tomatoes by enhancing photosynthesis in both winter and summer. *Frontiers in Plant Science*, 7: Article 448. doi: [10.3389/fpls.2016.00448](https://doi.org/10.3389/fpls.2016.00448)
  16. Lu N., Nukaya T., Kamimura T., Zhang D., Kurimoto I., Takagaki M., Maruo T., Kozai T., Yamori W. 2015. Control of vapor pressure deficit (VPD) in greenhouse enhanced tomato growth and productivity during the winter season. *Scientia Horticulturae*.197, 17-23.

## Books

1. Na Lu and S. Shimamura. 2018. *Next Generation Plant Factory*. Chapter 3: Protocols, issues and potential improvements of current cultivation systems. Springer (USA).
2. Na Lu and Cary A. Mitchell. 2016. *LED Lighting for Urban Agriculture*. Chapter 16. Supplemental lighting for greenhouse-grown fruiting vegetables. p. 219-232. Springer (USA).
3. Merrill F. Brandon, Na Lu, Toshitaka Yamaguchi, Michiko Takagaki, Toru Maruo, Toyoki Kozai, etc. 2016. *Handbook of Photosynthesis*, 3rd Edition. Chapter 40. The Next Evolution of Agriculture: A review of innovations in Plant Factories. P. 723-740. CRC Press.