Curriculum Vitae

Personal Data

Name: Wanneng Yang

Gender: Male

Telephone: 86-15871800820

Email: ywn@mail.hzau.edu.cn

Institution: National Key Laboratory of Crop Genetic Improvement and National Center of Plant Gene Research, College of Plant Science & Technology, Huazhong Agricultural University.

Address: No.1, Shizishan Rd., Wuhan 430070, P. R. China

Date and Place of Birth: October 1, 1984, Hubei, P. R. China

Education

9, 2002 - 7, 2006 Bachelor degree, Biomedical Engineering, Huazhong University of Science and Technology, China.

9, 2006 - 6, 2011 Ph. D. degree, Biomedical Engineering, Huazhong University of Science and Technology, China.

Position held

2018.12-, Professor, College of Plant Science & Technology, Huazhong Agricultural University

2017.08 - 2018.08，Visiting scholar, Aberystwyth University, UK

2014.01 -2018.11，Associated professor, College of Engineering, Huazhong Agricultural University.

2011.07 - 2013.12，Lecturer, Huazhong Agricultural University.

Current research interest

The major interest in recent years is Crop Phenomics and Agricultural Photonics. The research areas include high-throughput rice phenotyping techniques, optical imaging, and computers in agriculture.

Current Research Programs

Project name: Research and application of key technologies for digital acquisition and analysis of deep phenotypic traits in crops
(National Natural Science Foundation of China)
ID: U21A20205
Duration: 01, 2022 - 12, 2025
Project leader

Project name: Development and demonstration of indoor fixed phenotyping platform
(National Key Research and Development Program of China)
ID: 2022YFD2002304
Duration: 11, 2022 - 10, 2027
Project leader

Project name: Research on growth prediction and phenotype analysis algorithms for field growth crops
(National Core Technology Research and Development Project)
ID: NK03
Duration: 10, 2023 - 12, 2026
Project leader

Project name: High-throughput phenotyping of rice germplasm resources and innovative utilization
(National Key Research and Development Program of China)
ID: 2016YFD0100101-18
Duration: 07, 2016 - 12, 2020
My duties: Project leader. Identification of superior heat-resistance germplasm resources using High-throughput rice phenotyping

Project name: A novel phenotyping method and application for rice drought resistance
(National Natural Science Foundation of China)
ID: 31770397
Duration: 01, 2018 - 12, 2021
My duties: Project leader. Develop multi-imaging techniques to extract the drought resistance related traits, and identify the superior drought-resistance germplasm resources and dissect the genetic architecture of rice drought resistance.

Project name: The digital acquisition and analytic techniques of rice phenotypic traits
(National Program on High Technology Development)
ID: 2013AA102403
Duration: 01, 2013 - 12, 2017
My duties: Project leader of sub-topic. System design of high-throughput rice phenotyping facility and image analysis of rice aboveground phenotypic traits.

Project name: Extraction of rice tiller related traits equipped with X-ray micro computed tomography
(National Natural Science Foundation of China)
ID: 31200274
Duration: 01, 2013 - 12, 2015
My duties: Project leader. System design of high-throughput micro-CT, image reconstruction using FBP algorithm, image analysis for extraction of tiller traits

Membership in Academic Societies

International Plant Phenotyping Network (IPPN), Member
Vice Chairman of the Plant Phenotype Branch of the Chinese Society of Genetics
Vice President of the Smart Agriculture Professional Committee of the Chinese Crop Society
Youth Committee of Biomedical Photonics Major of Chinese Optical Society
The Second Member of the Youth Federation of Huazhong Agricultural University

Member of the Plant Phenomics Committee of the Chinese Society of Agricultural Biotechnology

Member of the Intelligent Agriculture Special Committee of the Chinese Association for Artificial Intelligence

Member of the Phenotype Group Branch of the Chinese Society of Biophysics

Executive Committee Member of the Digital Agriculture Branch of the Chinese Computer Society

Director of Hubei Botanical Society and Wuhan Botanical Society

IEEE IES China Smart Agriculture and Forestry Technology Committee

Editor

Plant Phenomics, Associate Editor

The Crop Journal, Guest Editor

Modern Agriculture, Editorial Board

Discover Agriculture, Editorial Board

iMeta, Youth Editorial Board

Smart Agriculture, Editorial Board

Reviewer

Molecular Plant, Nature Plant, Plant Physiology, The Plant Journal, Journal of Experimental Botany, Plant Biotechnology Journal, Plant Methods, Frontiers in Plant Science, The Crop Journal, Plant Phenomics, GigaScience, Review of Scientific Instruments, IEEE Access, ASABE, Advanced Science, Plant Communications, Cell Reports, Computers and Electronics in Agriculture, Journal of Genetics and Genomics, Trends in Plant Science, New Phytologist, Engineering, Artificial Intelligence in Agriculture, Biosystems Engineering, iScience, Discover Agriculture, IEEE Transactions on Industrial Informatics, Horticulture Research, PNAS, Nature Food, Information Processing in Agriculture, Phytopathology, Modern Agriculture, Remote sensing, Precision Agriculture, Food and Energy Security, Plants, Agronomy, In silico Plant, Current Opinion in Plant Biology, Journal of Plant Diseases and Protection, Scientific Reports, Rice Science, Plos One, Journal of Integrative Plant Biology, ASABE, Patterns, SN Applied Science, Plant Direct, Molecular Breeding, Computational and Structural Biotechnology Journal, Annals of Applied Biology, Rice, International Journal of Food Science & Technology, Planta, Physiologia Plantarum, Postharvest biology and technology, MethodsX, International Journal of Food Engineering, SCIENTIA AGRICOLA, Journal of medical imaging, Global change biology bioenergy, IEEE Access.

Methodological Competences

Digital image analysis based on LabVIEW and C program

Statistical analysis using SPSS (Statistical Product and Service Solutions)

Automatic control design using Omron PLC (Programmable logic controller)

Engineering drawing using UG (Siemens Product Lifecycle Management Software Inc.)

Published papers (*corresponding author)

2024

1. Ying Zhang#, Shenghao Gu#, Jianjun Du#, Guanmin Huang, Jiawei Shi, Xianju Lu, Jinglu

Wang, **Wanneng Yang***, Xinyu Guo* and Chunjiang Zhao*. Plant microphenotype: from innovative imaging to computational analysis. **Plant Biotechnology Journal**, 2024, 22:802-818. https://doi.org/10.1111/pbi.14244.

2. Meng Yang, Chenglong Huang, Zhengda Li, Yang Shao, Jinzhan Yuan, **Wanneng Yang**, Peng Song*. Autonomous navigation method based on RGB‑D camera for a crop phenotyping robot. **Journal of Field Robotics**, 2024:1–13. https://doi.org/10.1002/rob.22379

3. Botao Wang, Chenghai Yang, Jian Zhang*, Yunhao You, Hongming Wang, and **Wanneng Yang**. IHUP: An Integrated High-Throughput Universal Phenotyping Software Platform to Accelerate Unmanned-Aerial-Vehicle-Based Field Plant Phenotypic Data Extraction and Analysis. **Plant Phenomics** 2024; 6: Article 0164. https://doi.org/10.34133/plantphenomics.0164

4. Zhen Zhang#, Yunfeng Qu#, Feifei Ma#, Qian Lv, Xiaojing Zhu, Guanghui Guo, Mengmeng Li1, Wei Yang, Beibei Que, Yun Zhang, Tiantian He, Xiaolong Qiu, Hui Deng, Jingyan Song, Qian Liu, Baoqi Wang, Youlong Ke, Shenglong Bai, Jingyao Li, Linlin Lv, Ranzhe Li, Kai Wang, Hao Li, Hui Feng, Jinling Huang, **Wanneng Yang**, Yun Zhou* and Chun-Peng Son*. Integrating high-throughput phenotyping and genome-wide association studies for enhanced drought resistance and yield prediction in wheat. New Phytologist (2024) doi: 10.1111/nph.19942

5. Hui Feng, Yongqi Chen, Jingyan Song, Bingjie Lu, Caixia Shu, Jiajun Qiao, Yitao Liao*, and **Wanneng Yang**. Maturity Classification of Rapeseed Using Hyperspectral Image Combined with Machine Learning. Plant Phenomics 2024; 6: Article 0139. https://doi.org/10.34133/plantphenomics.0139

6. Weiliang Wen, Shenghao Gu, Ying Zhang, **Wanneng Yang*,** Xinyu Guo*. Standard Framework Construction of Technology and Equipment for Big Data in Crop Phenomics. Engineering. https://doi.org/10.1016/j.eng.2024.06.001

2023

7. Guofang Zhang, Jinzhi Zhou, Yan Peng, Zengdong Tan, Yuting Zhang, Hu Zhao, Dongxu Liu, Xiao Liu, Long Li, Liangqian Yu, Cheng Jin, Shuai Fang, Jiawei Shi, Zedong Geng, Shanjing Yang, Guoxing Chen, Kede Liu, Qingyong Yang, Hui Feng*, Liang Guo* and **Wanneng Yang***. High-throughput phenotyping-based QTL mapping reveals the genetic architecture of the salt stress tolerance of Brassica napus. **Plant Cell and Environment**, 2023, 46:549-566. DOI: 10.1111/pce.14485.

8. Zhixin Tang#, Zhuo Chen#, Yuan Gao, Ruxian Xue, Zedong Geng, Qingyun Bu, Yanyan Wang, Xiaoqian Chen, Yuqiang Jiang, Fan Chen, **Wanneng Yang***, and Weijuan Hu*., A Strategy for the Acquisition and Analysis of Image-Based Phenome in Rice during the Whole Growth Period. **Plant Phenomics** 2023; 5:Article 0058. https://doi.org/10.34133/plantphenomics.0058

9. Jie Gao#, Xin Hu#, Chunyan Gao, Guang Chen, Hui Feng, Zhen Jia, Peimin Zhao, Haiyang Yu, Huaiwen Li, Zedong Geng, Jingbo Fu, Jun Zhang, Yikeng Cheng, Bo Yang, Zhanghan Pang, Daoquan Xiang , Jizeng Jia, Handong Su, Hailiang Mao, Caixia Lan, Wei Chen, Wenhao Yan* , Lifeng Gao*, **Wanneng Yang*** and Qiang Li*. Deciphering genetic basis of developmental and agronomic traits by integrating high-throughput optical phenotyping and genome-wide association studies in wheat. **Plant Biotechnology Journal** 2023, 21, pp. 1966–1977.

10. **Wanneng Yang***, John H. Doonan, Xinyu Guo, Xiaohui Yuan and Feng Ling. Editorial: State-of-the-art technology and applications in crop phenomics, volume II. **Frontiers in Plant Science** 2023 14:1195377. doi: 10.3389/fpls.2023.1195377.

11. Zedong Geng#, Yunrui Lu#, Lingfeng Duan, Hongfei Chen, Zhihao Wang, Jun Zhang, Zhi Liu, Xianmeng Wang, Ruifang Zhai, Yidan Ouyang, **Wanneng Yang***. High-throughput phenotyping and deep learning to analyze dynamic panicle growth and dissect the genetic architecture of yield formation. **Crop and Environment** 2024, 3:1–11.

12. Yangmingrui Gao#, Yinglun Li#, Ruibo Jiang, Xiaohai Zhan, Hao Lu, Wei Guo, **Wanneng Yang**, Yanfeng Ding, and Shouyang Liu*. Enhancing Green Fraction Estimation in Rice and Wheat Crops: A Self-Supervised Deep Learning Semantic Segmentation Approach. **Plant Phenomics** 2023, 5: Article 0064. https://doi.org/10.34133/plantphenomics.0064.

13. Binyuan Xu, Ran Meng*, Gengshen Chen, Linlin Liang, Zhengang Lv, Longfei Zhou, Rui Sun, Feng Zhao and **Wanneng Yang**. Improved weed mapping in corn fields by combining UAV-based spectral, textural, structural, and thermal measurements. **Pest Management Science**, 2023, Volume 79, Issue 7 p. 2591-2602.

14. Zhihao Lu, Shihao Huang, Xiaojun Zhang, Yuxuan shi, **Wanneng Yang**, Longfu Zhu and Chenglong Huang*. Intelligent identification on cotton verticillium wilt based on spectral and image feature fusion. **Plant Methods** 2023, 19:75.

15. Chenglong Huang, Zhongfu Zhang, Xiaojun Zhang, Li Jiang, Xiangdong Hua, Junli Ye, **Wanneng Yang**, Peng Song*, and Longfu Zhu*. A Novel Intelligent System for Dynamic Observation of Cotton Verticillium Wilt. **Plant Phenomics** 2023; 5: Article 0013. https://doi.org/10.34133/plantphenomics.0013

16. Peng Song#*, Zhengda#, Meng Yang, Yang Shao, Zhen Pu, **Wanneng Yang** and Ruifang Zhai*. Dynamic detection of three-dimensional crop phenotypes based on a consumer-grade RGB-D camera. **Frontiers in Plant Science**, 2023, 14:1097725. doi: 10.3389/fpls.2023.1097725.

17. Shihao Huang#, Zhihao Lu, Yuxuan Shi, Jiale Dong, Lin Hu, **Wanneng Yang**, Chenglong Huang*. A Novel Method for Filled/Unfilled Grain Classification Based on Structured Light Imaging and Improved PointNet++. **Sensors** 2023, 23, 6331. https://doi.org/10.3390/s23146331

18. Mengyu Sun#, Shihao Huang, Zhihao Lu, Minghui Wang, Shiyao Zhang, Ke Yang, Bihong Tang, **Wanneng Yang**, Chenglong Huang*. A novel method for intelligent analysis of rice yield traits based on LED transmission imaging and cloud computing. **Measurement** 2023, 217: 113017.

2022

19. Lingfeng Duan#, Zhihao Wang#, Hongfei Chen, Jinyang Fu, Hanzhi Wei, Zedong Geng and **Wanneng Yang***. CropPainter: an effective and precise tool for trait‑ to‑ image crop visualization based on generative adversarial networks. **Plant Methods**, 2022, 18:138.

20. **Wanneng Yang***, Gregorio Egea* and Kioumars Ghamkhar*. Editorial: Convolutional neural networks and deep learning for crop improvement and production. **Frontiers in Plant Science**, 2022, 13:1079148. doi: 10.3389/fpls.2022.1079148

21. Hui Feng, Chaocheng Guo, Zongyi Li, Yuan Gao, Qinghua Zhang, Zedong Geng, Jing Wang, Guoxing Chen, Kede Liu, Haitao Li* and **Wanneng Yang***. Machine learning assisted dynamic phenotypes and genomic variants help understand the ecotype divergence in

rapeseed. **Frontiers in Plant Science**, 2022, 13:1028779. doi: 10.3389/fpls.2022.1028779

22. Peng Song#, Keyi Chen#, Longfu Zhu, Meng Yang, Chao Ji, Ailing Xiao, Haoyang Jia, Jian Zhang, **Wanneng Yang***. An improved cascade R-CNN and RGB-D camera-based method for dynamic cotton top bud recognition and localization in the field. **Computers and Electronics in Agriculture**, 2022, 202: 107442.

23. **Wanneng Yang*** and Ruifang Zhai. What can aerial phenotyping do and bring to us (breeders)? **New Phytologist**, 2022, 263: 1584-1604. https://doi.org/10.1111/nph.18413

24. Chenglong Huang, Zhijie Qin, Xiangdong Hua, Zhongfu Zhang, Wenli Xiao, Xiuying Liang, Peng Song and **Wanneng Yang***. An Intelligent Analysis Method for 3D Wheat Grain and Ventral Sulcus Traits Based on Structured Light Imaging. **Frontiers in Plant Science**, 2022, 13: 840908. doi: 10.3389/fpls.2022.840908

25. Chenglong Huang#, Weikun Li#, Zhongfu Zhang, Xiangdong Hua, Junya Yang, Junli Ye, Lingfeng Duan, Xiuying Liang and **Wanneng Yang***. An Intelligent Rice Yield Trait Evaluation System Based on Threshed Panicle Compensation. **Frontiers in Plant Science,** 2022, 13:900408. doi: 10.3389/fpls.2022.900408

26. Zhihao Tan#, Jiawei Shi#, Rongjie Lv#, Qingyuan Li, Jing Yang, Yizan Ma, Yanlong Li, Yuanlong Wu, Rui Zhang, Huanhuan Ma, Yawei Li, Li Zhu, Longfu Zhu, Xianlong Zhang, Jie Kong*, **Wanneng Yang*** and Ling Min*. Fast anther dehiscence status recognition system established by deep learning to screen heat tolerant cotton. **Plant Methods**, 2022, 18:53.

27. Dan Wu#, Lejun Yu#, Junli Ye, Ruifang Zhai, Lingfeng Duan, Lingbo Liu, Nai Wu, Zedong Geng, Jingbo Fu, Chenglong Huang, Shangbin Chen, Qian Liu*, **Wanneng Yang***. Panicle-3D: A low-cost 3D-modeling method for rice panicles based on deep learning, shape from silhouette, and supervoxel clustering. **The Crop Journal**, 2022, 10: 1386-1398 https://doi.org/10.1016/j.cj.2022.02.007

28. Nai Wu, Yilong Yao, Denghao Xiang, Hao Du, Zedong Geng, **Wanneng Yang**, Xianghua Li, Tingting Xie, Faming Dong and Lizhong Xiong*. A MITE variation-associated heat-inducible isoform of a heat-shock factor confers heat tolerance through regulation of JASMONATE ZIM-DOMAIN genes in rice. **New Phytologist**, 2022, 234: 1315–1331. doi: 10.1111/nph.18068

29. Yinghua Wang#, Songtao Hu, He Ren, **Wanneng Yang** and Ruifang Zhai*. 3DPhenoMVS: A Low-Cost 3D Tomato Phenotyping Pipeline Using 3D Reconstruction Point Cloud Based on Multiview Images. **Agronomy** 2022, 12, 1865. https://doi.org/10.3390/agronomy12081865

30. Junli Ye, Jingyan Song, Yuan Gao, Xu Lu, Wenyue Pei, Feng Li, Hui Feng* and **Wanneng Yang**. An automatic fluorescence phenotyping platform to evaluate dynamic infection process of Tobacco mosaic virus-green fluorescent protein in tobacco leaves. **Frontiers in Plant Science,** 2022, 13:968855. doi: 10.3389/fpls.2022.968855

31. Xinyi Wang, **Wanneng Yang**, Qiucheng Lv, Chenglong Huang, Xiuying Liang, Guoxing Chen, Lizhong Xiong and Lingfeng Duan*. Field rice panicle detection and counting based on deep learning. **Frontiers in Plant Science,** 2022, 13:966495. doi: 10.3389/fpls.2022.966495

32. Zhijie Qin, Zhongfu Zhang, Xiangdong Hua, **Wanneng Yang**, Xiuying Liang,Ruifang Zhai, Chenglong Huang*. Cereal grain 3D point cloud analysis method for shape extraction and filled/unfilled grain identification based on structured light imaging. **Scientific Reports**,

2022, 12: 3145.

33. Jijun Li, Tianjin Xie, Yahui Chen, Yuting Zhang, Chufeng Wang, Zhao Jiang, **Wanneng Yang**, Guangsheng Zhou, Liang Guo*, Jian Zhang*. High-throughput unmanned aerial vehicle-based phenotyping provides insights into the dynamic process and genetic basis of rapeseed waterlogging response in the field. **Journal of Experimental Botany**, 2022, 73(15), 5264-5278. https://doi.org/10.1093/jxb/erac242

34. Ziyue Guo, Chenghai Yang, **Wanneng Yang**, Guoxing Chen, Zhao Jiang, Botao Wang and Jian Zhang. Panicle Ratio Network: streamlining rice panicle measurement by deep learning with ultra-high-definition aerial images in the field. **Journal of Experimental Botany**, 2022, 73(19), 6575-6588.

35. Zhihao Tan#, Jing Yang#, Qingyuan Li* , Fengxiang Su, Tianxu Yang, Weiran Wang, Alifu Aierxi, Xianlong Zhang, **Wanneng Yang**, Jie Kong and Ling Min. PollenDetect: An Open-Source Pollen Viability Status Recognition System Based on Deep Learning Neural Networks. Int. J. Mol. Sci. 2022, 23, 13469. https://doi.org/10.3390/ijms232113469

36. Xiuliang Jin*, **Wanneng Yang**, John H. Doonan, Clement Atzberger. Editorial: Crop phenotyping studies with application to crop monitoring. The Crop Journal 2022, 10: 1221-1223.

2021

37. **Wanneng Yang#***, John H. Doonan, Malcolm J. Hawkesford, Tony Pridmore and Ji Zhou*. Editorial: State-of-the-Art Technology and Applications in Crop Phenomics. **Frontiers in Plant Science**, 2021, 12:767324. doi: 10.3389/fpls.2021.767324

38. Xi Wu#, Hui Feng#, Di Wu, Shijuan Yan, Pei Zhang, Wenbin Wang, Junli Ye, Guoxin Dai, Yuan Fan, Weikun Li, Baoxing Song, Zedong Geng, Jun Zhang, Wanli Yang, Guoxin Chen, Feng Qin, William Terzaghi, Michelle Stitzer, Lin Li, Lizhong Xiong, Jianbing Yan, Edward Buckler, **Wanneng Yang***, Mingqiu Da*. Using high-throughput multiple optical phenotyping to decipher the genetic architecture of maize drought tolerance. **Genome Biology**, 2021, 22:185.

39. Peng Song#, Jinglu Wang#, Xinyu Guo*, **Wanneng Yang***, Chunjiang Zhao. High-throughput phenotyping: Breaking through the bottleneck in future crop breeding. **The Crop Journal** 2021, 9: 633-645.

40. Di Wu#, Dan Wu#, Hui Feng, Lingfeng Duan, Guoxing Dai, Xiao Liu, Kang Wang, Peng Yang, Guoxing Chen, Alan P. Gay, John H. Doonan, Zhiyou Niu, Lizhong Xiong and **Wanneng Yang***. A deep learning-integrated micro-CT image analysis pipeline for quantifying rice lodging resistance-related traits. **Plant Communications**, 2021, 2: 100165 https://doi.org/10.1016/j.xplc.2021.100165

41. Xiuying Liang#, Junli Ye#, Xiaoyu Li, Zhixin Tang, Xuehai Zhang, Wenqiang Li, Jianbing Yan, **Wanneng Yang***. A high-throughput and low-cost maize ear traits scorer. **Molecular Breeding**, 2021, 41:17.

42. Lejun Yu#, Jiawei Shi#, Chenglong Huang, Lingfeng Duan, Di Wu, Debao Fu, Changyin Wu, Lizhong Xiong, **Wanneng Yang***, Qian Liu*. An integrated rice panicle phenotyping method based on X-ray and RGB scanning and deep learning. **The Crop Journal** 2021, 9(1): 42-56. https://doi.org/10.1016/j.cj.2020.06.009

43. Zhao Jiang#, Haifu Tu#, Baowei Bai, Chenghai Yang, Biquan Zhao, Ziyue Guo, Qian Liu, Hu Zhao, **Wanneng Yang**, Lizhong Xiong* and Jian Zhang*. Combining UAV-RGB

high-throughput field phenotyping and genome-wide association study to reveal genetic variation of rice germplasms in dynamic response to drought stress. **New Phytologist** 2021, doi: 10.1111/nph.17580.

44. Xiuying Liang#, Xichen Xu#, Zhiwei Wang, Lei He, Kaiqi Zhang, Bo Liang, Junli Ye, Jiawei Shi, Xi Wu, Mingqiu Dai and **Wanneng Yang***. StomataScorer: a portable and high-throughput leaf stomata trait scorer combined with deep learning and an improved CV model. **Plant Biotechnology Journal** 2022, 20:577-591.

45. Lingbo Liu#, Lejun Yu, Dan Wu, Junli Ye, Hui Feng, Qian Liu* **Wanneng Yang***. PocketMaize: an android-smartphone application for maize plant phenotyping. **Frontiers in Plant Science** 2021, 12:770217. DOI: 10.3389/fpls.2021.770217.

46. Xianpeng Zhang, Wenbo Huang, Xu Lu, Sisi Liu, Hui Feng, **Wanneng Yang**, Junli Ye, Feng Li, Shaoyong Ke* and Dengguo Wei*. Identification of Carbazole Alkaloid Derivatives with Acylhydrazone as Novel Anti-TMV Agents with the Guidance of a Digital Fluorescence Visual Screening. **Journal of Agricultural and Food Chemistry** 2021, 69: 7458-7466.

2020

47. **Wanneng Yang***, Hui Feng, Xuehai Zhang, Jian Zhang, John H. Doonan, William David Batchelor, Lizhong Xiong, Jianbing Yan. Crop phenomics and high-throughput phenotyping: past decades, current challenges and future perspectives. Molecular Plant, 2020, 13, 187–214.

48. Haitao Li, Hui Feng, Chaocheng Guo, Shanjing Yang, Wan Huang, Xiong Xiong, Jianxiao Liu, Guoxing Chen, Qian Liu, Lizhong Xiong, Kede Liu and **Wanneng Yang***. High-throughput phenotyping accelerates the dissection of the dynamic genetic architecture of plant growth and yield improvement in rapeseed. Plant Biotechnology Journal, 2020 https://doi.org/10.1111/pbi.13396

49. Nunzio Briglia, Kevin Williams, Dan Wu, Yaochen Li, Sha Tao, Fiona Corke, Giuseppe Montanaro*, Angelo Petrozza, Davide Amato, Francesco Cellini, John H. Doonan, **Wanneng Yang** and Vitale Nuzzo. Image-based assessment of drought response in grapevines. Frontiers in Plant Science, 2020, 11:595.

50. Weijuan Hu, Can Zhang, Yuqiang Jiang, Chenglong Huang, Qian Liu, Lizhong Xiong, **Wanneng Yang*** and Fan Chen*. Nondestructive 3D image analysis pipeline to extract rice grain traits using x-ray computed tomography. Plant Phenomics, 2020, https://doi.org/10.34133/2020/3414926

51. Hui Zhang, Hui Feng, Xu Lu, Chaofan Wang, **Wanneng Yang** and Feng Li*. An asymmetric bulge enhances artificial microRNA-mediated virus resistance. Plant Biotechnology Journal, 2020, 18: 608-610.

2019

52. Di Wu, Zilong Guo, Junli Ye, Hui Feng, Jianxiao Liu, Guoxing Chen, Jingshan Zheng, Dongmei Yan, Xiaoquan Yang, Xiong Xiong, Qian Liu, Zhiyou Niu, Alan P. Gay, John H. Doonan, Lizhong Xiong, and **Wanneng Yang***. Combining high-throughput micro-CT-RGB phenotyping and genome-wide association study to dissect the genetic architecture of tiller growth in rice. Journal of Experimental Botany, 2019, 70(2): 545-561.

2018

53. Zilong Guo#, **Wanneng Yang***, Yu Chang, Xiaosong Ma, Haifu Tu, Fang Xiong, Ni Jiang, Hui Feng, Chenglong Huang, Peng Yang, Hu Zhao, Guoxing Chen, Hongyan Liu, Lijun Luo, Honghong Hu, Qian Liu and Lizhong Xiong*. Genome-wide association studies of image

traits reveal the genetic architecture of drought resistance in rice. Molecular Plant, 2018. doi: 10.1016/j.molp.2018.03.018.

54. Lingfeng Duan#, Jiwan Han, Zilong Guo, Haifu Tu, Peng Yang, Dong Zhang, Yuan Fan, Guoxing Chen, Lizhong Xiong, Mingqiu Dai, Kevin Williams, Fiona Corke, John H. Doonan and **Wanneng Yang***. Novel digital features discriminate between drought resistant and drought sensitive rice under controlled and field conditions, Frontiers in Plant Science, 2018, 9:492. doi: 10.3389/fpls.2018.00492.

55. Di Wu, Zilong Guo, Junli Ye, Hui Feng, Jianxiao Liu, Guoxing Chen, Jingshan Zheng, Dongmei Yan, Xiaoquan Yang, Xiong Xiong, Qian Liu, Zhiyou Niu, Alan P. Gay, John H. Doonan, Lizhong Xiong, and **Wanneng Yang***. Combining high-throughput micro-CT-RGB phenotyping and genome-wide association study to dissect the genetic architecture of tiller growth in rice. Journal of Experimental Botany, 2018. doi:10.1093/jxb/ery373.

2017

56. Lingbo Liu#, **Wanneng Yang**; Junli Ye; Guoxing Chen; Lizhong Xiong; Qian Liu*. A portable phenotyping for maize plant using cellphone. Optics InfoBase Conference Papers, v Part F70-PIBM 2017, 2017.

57. Xiong Xiong#, Lingfeng Duan#, Lingbo Liu, Haifu Tu, Peng Yang, Dan Wu, Guoxing Chen, Lizhong Xiong, **Wanneng Yang*** and Qian Liu*. Panicle-SEG: A robust image segmentation method for rice panicles in the field based on deep learning and superpixel optimization. Plant Methods, 2017, 13: 104.

58. Hui Feng#, Guoxing Chen, Lizhong Xiong, Qian Liu* and **Wanneng Yang***.Accurate digitization of the chlorophyll distribution of individual rice leaves using hyperspectral imaging and an integrated image analysis pipeline. Frontiers in Plant Science, 2017, 8: 1238.

59. Hui Feng#, Zilong Guo, **Wanneng Yang**, Chenglong Huang, Guoxing Chen, Wei Fang, Xiong Xiong, Hongyu Zhang, Gongwei Wang, Lizhong Xiong* &Qian Liu*. An integrated hyperspectral imaging and genome-wide association analysis platform provides spectral and genetic insights into the natural variation in rice. Scientific Reports, 2017, 7: 4401.

60. Xuehai Zhang#, Chenglong Huang#, Di Wu, Feng Qiao, Wenqiang Li, Lingfeng Duan, Ke Wang, Yingjie Xiao, Guoxing Chen, Qian Liu, Lizhong Xiong, **Wanneng Yang***, and Jianbing Yan*. High-throughput phenotyping and QTL mapping reveals the genetic architecture of maize plant growth. Plant Physiology, 2017, 173: 1-11.DOI: 10.1104/pp.16.01516.

61. Xiong Xiong#, Lejun Yu#, **Wanneng Yang**, Meng Liu, Ni Jiang, Di Wu, Guoxing Chen, Lizhong Xiong, Kede Liu and Qian Liu*. A high‑throughput stereo‑imaging system for quantifying rape leaf traits during the seedling stage. Plant Methods, 2017, 13:7.

2016

62. Xiuying Liang#, Ke Wang, Chenglong Huang, Xuehai Zhang, Jianbing Yan, **Wanneng Yang***. A high-throughput maize kernel traits scorer based on line-scan imaging. **Measurement**, 2016, 90: 453-460.

63. Wei Fang#, Hui Feng, **Wanneng Yang**, Lingfeng Duan, Guoxing Chen, Lizhong Xiong and Qian Liu*. High-throughput volumetric reconstruction for 3D wheat plant architecture studies. Journal of Innovative Optical Health Sciences, 2016, 9(5): 1650037.

64. Lingfeng Duan#, **Wanneng Yang**, Guoxing Chen, Lizhong Xiong, and Chenglong Huang*. Accurate inference of rice biomass based on support vector machine. IFIP International

Federation for Information Processing 2016. D. Li and Z. Li (Eds.): CCTA 2015, Part I, IFIP AICT 478, pp. 356–365, 2016.

65. Chenglong Huang#, Lingbo Liu, **Wanneng Yang**, Lizhong Xiong, and Lingfeng Duan*. Rapid identification of rice varieties by grain shape and yield-related features combined with multi-class SVM. IFIP International Federation for Information Processing 2016. D. Li and Z. Li (Eds.): CCTA 2015, Part I, IFIP AICT 478, pp. 390–398, 2016.

2015

66. **Wanneng Yang#**, Zilong Guo#, Chenglong Huang, Ke Wang, Ni Jiang, Hui Feng, Guoxing Chen, Qian Liu and Lizhong Xiong*. Genome-wide association study of rice (Oryza sativa L.) leaf traits with a high-throughput leaf scorer. Journal of Experimental Botany, 2015, 66: 5605-5615.

67. Ni Jiang#, **Wanneng Yang**, Lingfeng Duan, Guoxing Chen, Wei Fang, Lizhong Xiong and Qian Liu*. A nondestructive method for estimating the total green leaf area of individual rice plants using multi-angle color images. Journal of Innovative Optical Health Sciences, 2015, 8, 1550002.

68. Lingfeng Duan#, Chenglong Huang, Guoxing Chen, Lizhong Xiong, Qian Liu, **Wanneng Yang**. High-throughput estimation of yield for individual rice plant using multi-angle RGB imaging, CCTA 2014, IFIP AICT 452, pp. 1–12, 2015.

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5. Landscape Plant Breeding (in Chinese), China Forestry Press, participated in editing
6. Plant Big Data Technology (in Chinese), Higher Education Press, Associate Editor
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