



Plastic pollution in croplands threatens long-term food security

Dan Zhang¹ | Ee Ling Ng² | Wanli Hu³ | Hongyuan Wang¹ | Pablo Galaviz⁴ | Hude Yang⁵ | Wentao Sun⁶ | Chongxiao Li⁷ | Xingwang Ma⁸ | Bin Fu³ | Peiyi Zhao⁹ | Fulin Zhang¹⁰ | Shuqin Jin¹¹ | Mingdong Zhou¹² | Lianfeng Du¹³ | Chang Peng¹⁴ | Xuejun Zhang¹⁵ | Zhiyu Xu¹⁶ | Bin Xi¹⁶ | Xiaoxia Liu¹⁷ | Shiyou Sun¹⁸ | Zhenhua Cheng¹⁹ | Lihua Jiang²⁰ | Yufeng Wang²¹ | Liang Gong⁶ | Changlin Kou²² | Yan Li²³ | Youhua Ma²⁴ | Dongfeng Huang²⁵ | Jian Zhu²⁶ | Jianwu Yao²⁷ | Chaowen Lin²⁸ | Song Qin²⁹ | Liuqiang Zhou³⁰ | Binghui He³¹ | Deli Chen² | Huanchun Li⁹ | Limei Zhai¹ | Qiuliang Lei¹ | Shuxia Wu¹ | Yitao Zhang¹ | Junting Pan¹ | Baojing Gu^{32,33}  | Hongbin Liu¹

¹Key Laboratory of Nonpoint Source Pollution Control, Ministry of Agriculture and Rural Affairs, Institute of Agricultural Resources and Regional Planning, Chinese Academy of Agricultural Sciences, Beijing, P.R. China

²School of Agriculture and Food, The University of Melbourne, Melbourne, Vic., Australia

³Institute of Agricultural Environment and Resources, Yunnan Academy of Agricultural Sciences, Yunnan, P.R. China

⁴Bioinformatics and Data Science Research Facility, Children's Medical Research Institute, Sydney, NSW, Australia

⁵Institute of Soil, Fertilizer and Water-Saving Agriculture, Gansu Academy of Agricultural Sciences, Lanzhou, P.R. China

⁶Institute of Plant Nutrition and Environment Resources, Liaoning Academy of Agricultural Sciences, Shenyang, P.R. China

⁷Protection Station of Agricultural Resources and Environment, Gansu Agricultural Department, Lanzhou, P.R. China

⁸Institute of Soil Fertilizer and Water Saving, Xinjiang Academy of Agricultural Sciences, Urumqi, P.R. China

⁹Institute of Plant Nutrition and Analysis of Inner-Mongolia Academy of Agricultural Sciences, Hohhot, P.R. China

¹⁰Institute of Plant Protection, Soil and Fertilizer Sciences, Hubei Academy of Agricultural Sciences, Wuhan, P.R. China

¹¹Research Center for Rural Economy, Ministry of Agriculture and Rural Affairs, Beijing, P.R. China

¹²Protection Station of Agricultural Resources and Environment, Xinjiang Agricultural Department, Urumqi, P.R. China

¹³Institute of Plant Nutrition and Resources, Beijing Academy of Agriculture and Forestry Sciences, Beijing, P.R. China

¹⁴Institute of Agricultural Resource and Environment, Jilin Academy of Agricultural Sciences, Changchun, P.R. China

¹⁵Institute of Agricultural Resources and Environment, Ningxia Academy of Agriculture and Forestry Sciences, Yinchuan, P.R. China

¹⁶Rural Energy and Environment Agency, Ministry of Agriculture and Rural Affairs, Beijing, P.R. China

¹⁷Beijing Agro-Environment Monitoring Station, Beijing, P.R. China

¹⁸Institute of Agricultural Resources and Environment, Hebei Academy of Agriculture and Forestry Sciences, Shijiazhuang, P.R. China

¹⁹Tianjin Agro-Environment Monitoring Station, Tianjin, P.R. China

²⁰Institute of Agricultural Resources and Environment, Shandong Academy of Agricultural Sciences, Jinan, P.R. China

²¹Institute of Soil Fertilizer and Environment Resources, Heilongjiang Academy of Agricultural Sciences, Harbin, P.R. China

²²Institute of Plant Nutrition, Agricultural Resources and Environment Science, Henan Academy of Agricultural Sciences, Zhengzhou, P.R. China

²³Institute of Environmental Resources and Soil Fertilizer, Zhejiang Academy of Agricultural Science, Hangzhou, P.R. China

²⁴School of Resource and Environment, Anhui Agricultural University, Hefei, P.R. China

²⁵Institute of Soil and Fertilizer, Fujian Academy of Agricultural Sciences, Fuzhou, P.R. China

²⁶Hunan Academy of Agricultural Sciences, Changsha, P.R. China

²⁷Soil and Fertilizer Institute, Guangdong Academy of Agricultural Sciences, Guangzhou, P.R. China

²⁸Soil and Fertilizer Institute, Sichuan Academy of Agricultural Sciences, Chengdu, P.R. China

²⁹Guizhou Institute of Soil and Fertilizer, Guiyang, P.R. China

Dan Zhang, Ee Ling Ng, Wanli Hu, and Hongyuan Wang contributed equally to this work.