

National Center for International Collaboration Research on Precision Agricultural Aviation Pesticide Spraying Technology



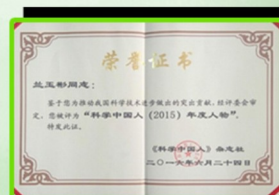
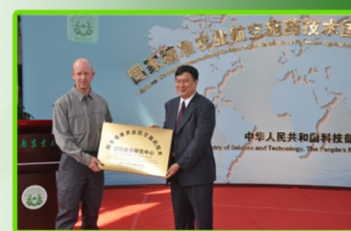
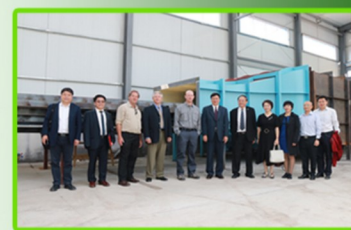
Professor Yubin Lan
“Thousand Talents Plan” Scholar

“National Center for International Collaboration Research on Precision Agricultural Aviation Pesticide Spraying Technology” is the national research center identified by the Ministry of Science and Technology of China. The center focuses on aerial plant protection for typical food crops and economic crops, and jointly carries out innovation research on key technology and common issues for agricultural aviation remote sensing, precision aerial variable spraying and other related technologies and equipment with the USDA ARS Aerial Application Technology Research Unit (USDA-ARS-AATRU), the Center of Pesticide Application and Safety, the University of Queensland, Australia, and other world-class research institutions in advanced agricultural aviation application technologies in order to promote the development of precision agricultural aviation technology.

The Director and the Lead Scientist of the center is Professor Yubin Lan, who is the “Thousand Talents Plan” Scholar, and the chair of CIGR Precision Aerial Application Working Group. The research team of the center is composed of more than 50 faculty members plus over 60 MS/PhD students from agricultural engineering, mechanical engineering, electronics, communications, mechanics, computer engineering, plant protection and other various disciplines. The center is equipped with eight specialized laboratories of agricultural aviation application technologies, including Agriculture Airborne Remote Sensing Laboratory, Agricultural Aerial Work Platforms Research Laboratory, Agriculture Aerial Spraying Research Laboratory, Agricultural Aviation Testing Technology Laboratory, Agricultural Aerial Spraying Efficacy Evaluation Laboratory, Agricultural Aviation Sensor Development Laboratory, Agricultural Aviation Big Data Laboratory, and Agricultural Aviation Industry-Education-Research Cooperation Laboratory.

Facility and equipment of the Center for agricultural aviation technology research is at the advanced level in China. The agricultural aviation wind tunnel laboratory, completed in May 2017 with the total area of about 4500m², was designed and constructed based on the international ISO latest standard ISO22856-2012. The wind tunnel is the first combined wind tunnel in China with high-speed and low-speed function especially for agricultural aviation research. It will also be one of the most advanced wind tunnels in agricultural engineering area of the world.

The Center has dedicated to carrying out research on Precision Agricultural Aviation, Aerial Pesticides Spraying Technology and Application, Droplet Deposition Distribution of Agricultural UAVs, Agricultural Information Acquisition and Analysis with Low Altitude UAV Remote Sensing, Intelligent Control Systems of Agricultural UAVs, Critical Components, Control Technology and Equipment for Agricultural UAV Precision Spraying, Agricultural UAV Performance Test Platform and Other Key Technologies.



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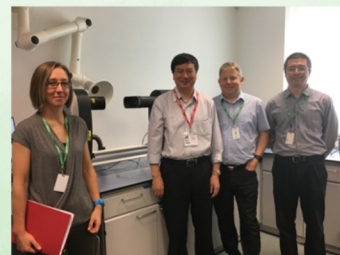
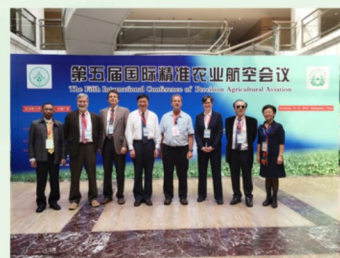
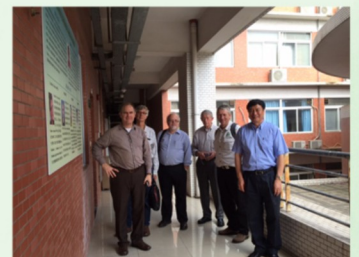
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Up to now, the Center has been presiding over and undertaking more than 20 important national and provincial projects, including 2016 pilot project “High Efficient Ground and Aerial Spraying Technology and Intelligent Equipment” of the National Key Research and Development Plan “Research and Development of Integrated Technologies for Reduced-Applications and Increased-Efficiencies of Chemical Fertilizers and Pesticides”, 863 projects, the National Natural Science Foundation of China, important projects of Guangdong Province, and other agricultural aviation research projects with the total research funding to a hundred million Yuan.

In 2016, the Center assisted the Ministry of Agriculture to found "National Aviation Plant Protection Science and Technology Innovation Alliance," and Professor Yubin Lan was selected as the executive vice president. The Center also helped organize "National Agricultural Self-Propelled Plant Protection Machinery Science and Technology Innovation Alliance". Since November 2014, the Center has signed industry-education-research cooperation agreements with Anyang Quanfeng Aviation Plant Protection Technology, Guangzhou Xaircraft, Beidahuang General Aviation, Shandong Ruida Pest Prevention & Control, Shenzhen Hi-Tech New Agriculture Technology, Xinjiang Tianshan Yuren Aviation Plant Protection Technology and other companies. Substantive cooperation research has been conducted on technology research & development and joint spraying tests in manned/unmanned aircraft spraying and Beidou satellite navigation.

The Center has successfully organized the “4th International Conference of Precision Agriculture Aviation (Guangzhou) in November, 2014, the “Precision Agriculture Aviation Conference of the 6th Asian Conference on Precision Agriculture (Guangzhou)” in November, 2015, and the “5th International Conference of Precision Agriculture Aviation (Guangzhou)” in November, 2016. The Center also co-sponsored the “North China Food Crops Aerial Spraying Technology Workshop (Anyang)” in May, 2015, the “7th International Symposium on Precision Agriculture and Aerial Precision Application Technology (Nanjing)” in November, 2015, and the “2016 World Precision Agricultural Aviation Conference (Beijing)” in April, 2016. The Center has established three Sub-centers at the USDA ARS Aerial Application Technology Research Unit (USDA-ARS-AATRU), the Center of Pesticide Application and Safety, the University of Queensland, Australia, and Ag-Nav Inc., Canada.

The research platforms of the center also include “International Laboratory of Agricultural Aviation Pesticide Spraying Technology” and “Guangdong Engineering Research Center for Agricultural Aviation Application”. These important platforms have played an important role for future international exchanges and cooperation on personnel training, joint aerial spraying tests, research and development of key technology and equipment for precision agricultural aviation, etc.



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