



:insideview

profile feature

Zhou Guanghong, *president of Nanjing Agricultural University.*

With a history that extends back to 1902, Nanjing Agricultural University (NAU) is one of China's oldest higher education institutions with an agricultural science focus. Now one of the top 50 universities in the country, NAU has matured into a comprehensive research university with 20 colleges offering hundreds of degree programmes and promoting cutting-edge research in basic and applied sciences. Here, Zhou Guanghong, president of NAU, discusses the development of the university and his vision for building a world-renowned institution for agricultural education and research.

Q. What are NAU's primary development goals for the next ten years?

Our goal is to become one of the world's top universities for agricultural sciences. To accomplish this, we must attract top-level researchers, provide world-class training to our students, advance our research in the agricultural, life and environmental sciences, and — crucially in my view — conduct innovative research that benefits society. NAU already ranks 78th in the 2015 National Taiwan University Ranking for the field of agriculture. By 2020, we hope to be among the top 50 universities globally in our core subject areas, and we want to be among the top 500 universities in the Academic Ranking of World Universities in all subject areas by 2030.

We recognize the importance of aligning our development goals with national interests. Specifically, our research should not be limited to agriculture and crop production, but it must also focus on the impact of agricultural and rural development as well as on the coordinated development of food security along with animal and human health.

Q. How do you plan to achieve these goals?

We have initiated several programmes to enhance the growth of our researchers, including the Zhongshan Scholar Project, which supports career development and encourages innovation from outstanding scientists selected for the programme. In addition, we have established a postdoctoral faculty track that enables us to identify the most promising

scholars for faculty positions. To promote professional competence, we have adopted international standards to recruit and evaluate faculty members.

In addition to attracting top scholars to boost the strength of our research, we are reinforcing our core subject areas. We are establishing novel research platforms and building two new campuses to ensure we will have adequate space and research facilities as we grow.

We recognize that international cooperation must play a key role as we evolve into a world-class university. NAU maintains ties with over 160 universities and research institutes around the world, and has established 10 international research centres. We participate in many international collaborative research programmes and are continuously augmenting academic exchanges with world-leading institutions. We are now working on setting up more international exchange programmes for graduate students.

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Q. What are NAU's strengths?

NAU is located in Nanjing, one of China's great ancient capitals and the modern and vibrant capital city of Jiangsu Province. The university shares a proud historical tradition with the city as it was the first Chinese university to offer four-year bachelor degrees in the agricultural sciences. Today, as a national key university under the Chinese Ministry of Education, we balance that heritage with modern expertise and leadership. In the area of agricultural sciences, NAU currently ranks in the top 0.1 percent globally according to Thomson Reuters Essential Science Indicators, while we are ranked in the top 1 per cent in the areas of plant and animal science, environment and ecology,

and biology and biochemistry. In our core competencies, notable results from research at NAU in crop genetics and breeding, crop growth modelling, quality control and processing of agricultural products, pest control, veterinary medicine, utilization of agricultural waste, and bioorganic fertilizers have been published in prominent international journals.

Q. How can academic research and student education contribute to each other?

Academic research and student training certainly go hand-in-hand and should develop concurrently. NAU encourages its undergraduate students to gain hands-on research skills by working directly on research projects. Our well-established research platforms and experienced faculty at NAU also give students the opportunity to see leading-edge research firsthand, giving them a better understanding of how their research fields are advancing. Of course, faculty members also benefit from student participation and their frequently innovative input in research projects. Currently, 75 per cent of the papers published by NAU researchers have graduate students as the first author. Recently, one of our PhD students was first author of a paper on jasmonate signalling published in *Nature*.

Q. How does NAU contribute to regional and national development?

The soul of a university lies in its academic spirit, but a university also has the broader mission to serve all of society. This is what we are striving for at NAU. To give an example, a team led by Wan Jianmin researching rice breeding and pest resistance successfully cloned several important genes in rice. The team's research was published in *Nature* and other respected international journals, but more importantly, it helped to control the spread of rice stripe virus in southern China. Another example is NAU's research centre for new rural development, which was founded in line with national priorities for promoting development in rural areas. To foster this type of consequential research, we are now emphasizing a more multidisciplinary approach and stressing social service when evaluating researchers.



Nanjing Agricultural University

An Agricultural Research Pioneer in China

As one of the Ministry of Education's '211 project' universities, NAU is dedicated to fundamental and applied research in the field of agriculture.

A selection of the NAU-led research on critical national and global issues includes:

Crop Science

Gai Junyi, an academician at the Chinese Academy of Engineering, is dedicated to breeding new soybean varieties and increasing their productivity and quality. Wan Jianmin focuses on breeding rice varieties with disease and pest resistance, the results were published in *Nature*, *Nature Biotechnology* and *Nature Genetics*. Zhang Tianzhen, together with Chen Z. Jeffery at the University of Texas, sequenced the whole upland cotton genome (*Nature Biotechnology*, 2015). Cao Weixing and Zhu Yan's research on crop information technology covers crop growth modelling and general knowledge models for crop management. Ma Zhengqiang focuses on the identification of powdery mildew and scab resistance genes in wheat. Chen Fadi and Hou Xilin study the breeding of chrysanthemums and non-heading Chinese cabbage, respectively, and developed many new varieties. Zhang Shaoling's research uncovered the mechanism of self-incompatibility in pears.

Wu Yidong tested the 'natural refuge strategy for delaying insect resistance to transgenic cotton crops' (*Nature Biotechnology*, 2014). Wang Yuanchao and Zheng Xiaobo

identified new genes in signal transduction and the gene regulation network of plant-oomycete interaction. Han Zhaojun carried out pest resistance target research and established supporting technology, effective in controlling cotton bollworm and *Chilo suppressalis*.

Animal Health

Lu Chengping has focused on microbiology research associated with livestock. In 2013, Lu's lab was approved by the World Organization for Animal Health as the world's only reference lab for the diagnosis of swine *streptococcus*. Jiang Ping developed two vaccines for swine to effectively control infection with PRRSV and PCV2 viruses. Zhu Weiyun also developed probiotics for swine and enzyme preparations for chickens.

Food Safety

Zhou Guanhong and Xu Xinglian uncovered the mechanisms underlying the formation of volatile compounds in traditional Chinese cured meat products. They have also established systemic meat grading and quality control standards. Zhou Yingheng focuses on the marketing and circulation of agricultural products, especially relating to issues of food quality and safety risk control.

Environmental Sciences

Shen Qirong works on technology for the production of bio-organic fertilizers from solid waste material such as straw and animal manure. Zhao Fangjie found that microorganisms in rice paddy soil are able to oxidize and volatilize heavy metals. Pan Genxing focuses on the production and

application of Bio-char from recycled straw. Xu Guohua studies the molecular biology of crop nutrients and water efficient use. Zhang Wenhua and Jiang Mingyi have many achievements in understanding the mechanisms of plant resistance to abiotic stresses.

Agricultural Economics and Social Science

Zhong Funing and Zhu Jing focus on the theory and policy of national food security in the context of globalization. Qu Futian has introduced innovations in systems of land property rights and regional economic evaluation theory. Wang Siming has been undertaking research on China's agricultural civilization and the Chinese philosophy of science and technology.

Focused on recruiting and retaining high-calibre faculty and building world-class campus facilities, NAU is committed to becoming a leading centre of agricultural education and research.

Nanjing Agricultural University Human Resources: <http://rsrsw.njau.edu.cn/html/en/html/lmy/1.html>



Contact

Tel: 86-25-8439-5754
 Fax: 86-25-8443-2420
 Website: www.njau.edu.cn