MODEL PLANTS

An indoor rice model

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Credit: Image courtesy of Qian Qian and Shikai Hu

As a model species, rice has been successfully utilized to greatly enhance our understanding of the biology of cereal crops. However, its long growth period and heavy dependence on natural environment for cultivation have hampered large-scale indoor research. Shikai Hu, of the China National Rice Research Institute of Chinese Academy of Agricultural Sciences, and colleagues now develop a rice model, namely Xiaowei, for indoor research.

Xiaowei was obtained by screening tens of thousands of germplasms in a mutant library in the background of the *japonica* rice, Nipponbare (left in the image). It displays super-dwarf architecture, a shorter growth period, lower biomass and higher space-utilization compared with the wild-type Nipponbare, allowing large-scale indoor cultivation and evaluation, like *Arabidopsis*. Since it is easy to precisely control experimental conditions in indoor research systems, Xiaowei represents a good model to perform genetic screening and gene editing. Based on this indoor system, the researchers were able to screen over 200 stress-resistant germplasms. To further optimize this model, they developed Xiaowei[93] in the *indica* rice 93-11 background so as to expand its usefulness. Also, a Xiaowei-*Se5* line displaying a further shortening of heading date was developed (right in the image).

Using a mapping population derived from Xiaowei lines, the authors managed to clone the internode elongation gene, *EUI1*, demonstrating the usefulness of this model. However, this system is not suitable for studying yield-related traits.

The draft genome sequences of Xiaowei lines in both Nipponbare and 93-11 backgrounds were generated, providing genome resources to facilitate the use of this model system.

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