

Special Seminar

To invite researcher from Japan International Research Center for Agricultural Sciences (JIRCAS), Japan. We will hold a special seminar on sugarcane breeding.

Date and Time: June 21, 2024, 14:00-15:00

Place: International training room at ALRC



Challenges in wide crossing for sugarcane improvement Dr. Yoshifumi Terajima

**Senior researcher, Japan International Research Center for Agricultural Sciences
(JIRCAS), Japan**

Sugarcane is the world's largest production crop at 1.9 billion tons and is important for global food and energy supplies. It is believed that in the future, the industry will develop into a biorefinery industry that comprehensively utilizes the entire sugarcane biomass (sugar and fiber). To realize the development, improvement of sugar and fiber productivity along with adapting to climate change are needed. However, the stagnation of improvement of sugarcane productivity through breeding due to the narrow genetic diversity of modern varieties and breeding materials has been a major challenge. In order to broaden the genetic diversity of sugarcane breeding and realize improvement of sugar and fiber productivity, JIRCAS has conducted research focusing on the wide crossing with wild germplasm of sugarcane-related species and genera.

In the use of interspecific hybridization, we have focused on wild sugarcane, *Sacharum spontaneum*, with the excellent ratooning ability and developed varieties with high sugar and fiber productivity in Thailand and Japan through interspecific hybridization and subsequent backcrossing to sugarcane. For the intergeneric hybridization, we focus on *Erianthus arundinaceus* because of its large and deep root system and excellent adaptability to adverse environments such as drought. Intergeneric F₁ hybrids between sugarcane and *E. arundinaceus*, and its backcross population to sugarcane were generated, and evaluated their agronomic traits and cytogenetic characteristics. Furthermore, we also evaluated the root characteristics of the F₁ hybrids and backcrossing clones and found that deep root characteristics of the *E. arundinaceus* can be introduced into the sugarcane. This seminar will introduce the results obtained to date and perspectives for the future.

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