

DivBreed

Integration of genetic resources from gene bank into breeding program and optimization of their use for genetic improvement: a case study on rice.

ABSTRACT

The DivBreed project seeks to optimize the use of genetic diversity in breeding programs via a better understanding of elite diversity. It started in January 2020 funded by Agropolis Fondation and SEARCA for a duration of three years.

The core of the project is a PhD research conducted thanks to a collaboration between research institutes and universities in France and in the Philippines. The project involves researchers from Cirad (Centre de coopération internationale en recherche agronomique pour le développement) and IRRI (International rice research institute) with the support of UPLB (University of the Philippines – Los Baños) and UM (Université de Montpellier). Moreover, the PhD student will split his time between the Philippines (hosted by IRRI) and France (hosted by Cirad).

The PhD student chosen for this project is Nguyen Van Hieu. He worked for the Cũu Long Delta Rice Research Institute and obtained his master degree from UPLB. He joined IRRI on 20 January 2020 and started the first semester at UPLB at the same time. Hieu works under the direction of Hayde Galvez (UPLB) and Jean-Christophe Glaszmann (Cirad).

2. Research works

The characterization of elite diversity per se and in relation with the diversity of *Oryza sativa* is a central part of the project. Elite lines from the breeding program for irrigated systems at IRRI were selected to form the irrigated core panel (ICP). This panel is composed of parental lines from the last cycles of the breeding program. For most of them, they derived from the breeding efforts that were conducted at IRRI since 1960. The current number of elite lines composing the ICP is 161.

During the first year of the project, phenotypic data (plant height, days to flowering, grain yield) were collected in different locations where the irrigated program operates (Figure 1). Initially, 23 trials were conducted at IRRI or with the partners in the regions. Due to the Covid-19 pandemic, a few trials were not harvested in relation with local restrictions. After quality control, a final number of 17 trials were available for subsequent analyses. It should be noted that not all the lines were evaluated in all environments. This relates to the nature of the ICP. Indeed the ICP is composed of parents of different cycles of the breeding program. Therefore, the ICP was enriched since its creation in 2018.

Year : 2018

Project number : 1803-007

Type of funding : AAP ASE

Project type : AAP

Research units in the network : AGAP

Start date : 2020-01-01

End date : 2022-12-31

Flagship project : no

Project leader : Jean-Christophe Glaszmann

Project leader's institution : Cirad

Project leader's RU : AGAP

Budget allocated : 33198 €

Total budget allocated (including co-financing) : 66729 €

Funding : Labex