

Genomic Selection models for the 3K SNP-Seek set for 1) grain Zn concentrations and 2) yield under low-fertility conditions in Madagascar.

Project Title: P1678 - JIRCAS contribution to flagship project 5

Description of the innovation: Developed Genomic Selection models for the 3K SNP-Seek set for 1) grain Zn concentrations and 2) yield under low-fertility conditions in Madagascar and showed that a GP approach is suitable for identifying new donors. As a result five donors have been utilized in the development of new breeding populations (2021).

New Innovation: Yes

Stage of innovation: Stage 3: available/ ready for uptake (AV)

Innovation type: Genetic (varieties and breeds)

Geographic Scope: National

Number of individual improved lines/varieties: 1

Country(ies):

- Madagascar

Description of Stage reached: Five donors have been utilized in the development of new breeding populations. Tanaka R, et al, (2021) From gene banks to farmer's fields: Using genomic selection to identify donors for a breeding program in rice to close the yield gap on smallholder farms. Theoretical and Applied Genetics 134:3397–3410.

Name of lead organization/entity to take innovation to this stage: JIRCAS - Japan International Research Center for Agricultural Sciences

Names of top five contributing organizations/entities to this stage:

- FOFIFA - Centre National de Recherche Appliqué au Développement Rural

Milestones:

- 5-10 elite breeding lines and/or varieties combining tolerance of two to three of the relevant stresses in the three ecosystems developed, having 25-50% reduction in yield losses
- 75% of the targeted breeding tools and resources developed and used in breeding programs. Use of gene editing for the validation of the RHBV virus disease resistance gene for LAC based on genetic diversity studies

Sub-IDs:

- 11 - Adoption of CGIAR materials with enhanced genetic gains
- 1 - Increased household capacity to cope with shocks

Contributing Centers/PPA partners:

- JIRCAS - Japan International Research Center for Agricultural Sciences

Evidence link:

- <https://link.springer.com/article/10.1007%2Fs00122-021-03909-9>

Deliverables associated: <Not Defined>

Contributing CRPs/Platforms:

- Rice - Rice