





₽ CASE STUDY **RICE TRAIT PRIORITISATION AND** VALUATION IN TANZANIA **Trait Prioritisation**



AbacusBio, the International Rice Research Institute (IRRI), and the Tanzanian Agricultural Research Institute (TARI) partnered in a project focusing on trait prioritisation, bioeconomic valuation, and product profile development for rice in The project explored two components: 1) Tanzania. Participatory surveys for trait prioritisation and market segmentation assessment, and 2) Economic analysis and bioeconomic value modelling (results soon to be published).

The Accelerating Genetic Gains in Rice (AGGRi) project of IRRI aims to develop market-driven and gender-responsive product profiles to determine breeding priorities and investments therein. AbacusBio's approach of determining economically weighted gender-sensitive trait weightings for rice breeding in Tanzania presented an opportunity to advance breeding for user-preferred trait combinations with greater odds of increasing demand and adoption of replacement varieties. The platform of survey approaches and tools - supported by software – to investigate preferences for trait improvements (1000Minds® software) and demographic characteristics (Alchemer software), combined with advanced analyses of survey outputs, was used to inform trait improvement priorities, market needs, and user- and typology-focused product profiles. These approaches have been designed specifically to value traits and inform breeding programs.

Through multiple analyses, rice trait improvement preferences were identified, trait-combinations highlighted within different typologies, and sociodemographic characteristics of the typologies described. Using genetic data and trait preferences, economic values (EVs) were calculated to inform selection indexes. These analyses resulted in selection indexes designed

to better reflect the needs of stakeholders in the rice supply chain and inform the product profiles and breeding program needs in Tanzania.

Selection indexes were derived in a case study using the participatory trait improvement priorities and literature sources on genetic parameters and the results indicate that rice varieties could be ranked to target the needs of different users/typologies. Knowledge of the different sociodemographic characteristics of the two typologies will help in marketing varieties and tailoring messaging to target growers.

At large, rice producers prioritised genetic improvement in drought tolerance, resistance to yellow mottle virus and leaf blast, as well as in milling recovery. Two typologies of rice growers were identified, one preferring improvements in plant robustness (e.g., disease resistance and drought tolerance) the other in quality (e.g., taste, grain shape, and aroma).

The participatory surveys for trait prioritisation and market segmentation assessment played a key role in generating information on trait improvement priorities, market needs and socio-demographic characteristics of end-users, and EV calculations vital for demand-driven rice variety replacement. Overall, variety development based on product profiles using economic values will revolutionize future rice breeding and thus positively impact the rice production-processingmarketing-consumption continuum in Tanzania.

Further development and testing of selection indexes alongside existing breeding program tools, using rice genetic merit data, is needed before potential implementation.



Relative emphasis (%) on the traits, for the overall index

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Some of the reasons for using improved varieties of rice in Tanzani