

AfricaRice bred varieties are released in Madagascar to address food insecurity

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Pic 1: Actual field evaluation of breeding lines with submergence tolerant gene at Talata

In Madagascar, rice serves as a fundamental dietary staple, making the nation one of the world's highest per-capita consumers of rice. Despite an annual rice production averaging four million metric tons, Madagascar struggles to satisfy its own demand, leading to national food insecurity. In recognition of the country's profound reliance on rice, AfricaRice established an office in Madagascar in 2015 to collaborate with the National Agricultural Research Institute (FOFIFA). Through this collaborative venture, breeding lines, sourced from AfricaRice breeding program, were vigorously and meticulously assessed in Madagascar, resulting in the release of rice varieties tailored to both consumer preferences and the needs of local rice producers across different ecological settings. Notably, two significant rice varieties have been recently introduced, known as FOFIFA 197

and FOFIFA 198, designed for cultivation in irrigated lowland and rainfed lowland environments, respectively.

Variety FOFIFA 197 is the result of an interspecific cross between *Oryza glaberrima* and *Oryza sativa*, a breeding endeavor carried out at AfricaRice. Before its official release, this variety underwent a rigorous evaluation process, including multi-environment trials, farmer participatory selection, and sensory assessments by consumers to assess its grain quality. In addition, it went through a national performance trial adhered to the standards set by the country's varietal release committee. In all these assessments, FOFIFA 197 consistently exhibited exceptional performance, surpassing the local popular variety by a significant margin of 20%. Moreover, it demonstrated robust growth in areas affected by salinity without any compromise in yield. Additionally, this variety displayed a remarkable level of resistance to blast disease, a significant concern in regions where the disease is prevalent. As a testament to its potential, FOFIFA 197 is slated for introduction into expansive irrigation schemes located in the Southwest and Northeast regions of Madagascar.

Conversely, FOFIFA 198 is specifically introduced for the rainfed lowland ecology, an environment where rice production is threatened by the recurring hazard of flash floods. Madagascar's geographical location places it at risk of experiencing numerous cyclones originating from the surrounding oceans. These cyclones unleash torrential rains, inundating the region with a substantial volume of water over a relatively short period, which can persist for up to two weeks. Such floods pose a severe threat to the entire agricultural yield, potentially causing devastating losses.



Pic 2: Farmers field day at FOFIFA 197 plot with women farmers at Bas Mangoky irrigation scheme

In response to these environmental challenges, AfricaRice breeders embarked on the development of breeding lines augmented with submergence-tolerant genes into locally popular rice varieties. FOFIFA 198 is one such breeding line that has displayed remarkable resilience in flooded conditions. Notably, it also exhibits a high degree of cold tolerance, rendering it suitable for the Central Highlands of Madagascar, where cold stress remains a significant hindrance to rice cultivation. Similar to FOFIFA 197, this variety has successfully navigated the National Performance Trial and consumer preference assessments. The introduction of this variety is expected to provide invaluable support to small-scale farmers, protecting their crops from cyclone and cold-induced losses and ensuring a consistent food supply even in the face of such climatic challenges.

A comprehensive set of demonstrations and farmer field days were organized with the aim of encouraging the widespread adoption of the new rice varieties. Furthermore, training programs were designed and implemented for community seed growers to establish a dependable source of high-quality certified seeds in the region. All in all, the introduction of these two rice varieties is poised to have a significant and positive influence on Madagascar's local rice production, serving as a crucial component in advancing national food security initiatives.



Pic 3: FOFIFA 197 Seed production at Bas Mangoky irrigation scheme-Madagascar