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Grain diversity and cultivation of Indonesian swamp rice germplasm: building the foundation for an ex-situ conservation programme

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SUMMARY

Tropical swamps are ecosystems with high genetic resources amongst plants, animals and microbes that are also in some demand as agricultural land. Traditional rice cultivars, known as swamp rice, are very interesting in this context, mainly because of their high adaptability to extreme local conditions such as waterlogging, low pH, heavy metal poisoning and salinity. We have collected 107 accessions of swamp rice from seven Indonesian provinces across the two large islands of Sumatra and Kalimantan. In this study we aimed to determine the range of grain trait diversity amongst this swamp rice germplasm, and to cultivate the different forms under managed conditions at the Research Station of the Indonesian Swamp Agricultural Research Institute (ISARI) in South Kalimantan. The germplasm was classified into six categories on the basis of grain shape, i.e., very long-slender, very long-intermediate, long-slender, long-intermediate, medium-slender and medium-intermediate. The very long-slender class, identified as the *indica* subspecies, was dominant (71%). The germplasm was planted successfully and grew well, with most plants >100 cm tall but showing height differences between different accessions. The accession *Ketan* from Lampung was tallest and *Betek* from South Sumatra was shortest. Our study provides an initial foundation for a future ex-situ conservation effort for swamp rice in Indonesia.

KEY WORDS: genetic diversity, landrace, *Oryza sativa*, peatswamp

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