Morpho-Agronomic Characterization of Sugar Regulatory Administration (SRA) Plant Genetic Resources: Development of a Dichotomous Key for Classification

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The comprehensive characterization of plant genetic resources is essential for their effective utilization in breeding programs and conservation efforts. This study focuses on the morpho-agronomic characterization of Sugar Regulatory Administration (SRA) plant genetic resources, aimed at constructing a dichotomous key for systematic classification and identification.

A diverse collection of 936 SRA plant genetic resources encompassing a wide range of sugarcane varieties was meticulously evaluated for morphological and agronomic traits. Quantitative and qualitative traits, including shapes of bud, inner and outer auricle, trichome quality, leaf size, color, etc. were assessed and documented. Fifty-two traits were gathered per germplasm accession.

The collected data will undergo rigorous statistical analyses to identify key morphological descriptors and discern trait variations among the SRA plant genetic resources. Subsequently, a dichotomous key, a user-friendly classification tool, will be developed based on the identified morpho-agronomic traits, enabling accurate and systematic identification of the different varieties.

The dichotomous key will provide a systematic framework for the identification and classification of SRA plant genetic resources, facilitating their effective management, utilization, and conservation. This tool enables researchers, breeders, and stakeholders to differentiate and categorize sugarcane varieties based on their distinctive morphological and agronomic characteristics.

Moreover, the compiled dataset and developed key serve as valuable resources for germplasm conservation, aiding in the preservation of genetic diversity and the selection of diverse parental combinations for future breeding programs. Additionally, the information obtained through this characterization contributes to informed decision-making in breeding strategies for trait improvement and varietal development.

In conclusion, the morpho-agronomic characterization of SRA plant genetic resources and the development of a dichotomous key offer a comprehensive framework for systematic classification and identification. This facilitates effective utilization, conservation, and strategic breeding efforts, ensuring the sustainable management and enhancement of sugarcane genetic resources for the sugar industry and broader agricultural sustainability.

Prepared by:

RIMMON T. ARMONES
Supervising Science Research Specialist

Noted by:

HELEN B. LOBATON
Manager III- RD& E Visayas

Certified completed:

ATTY. IGNACIO S. SANTILLANA
Deputy Administrator II, Research Development and Extension