



ALAYN LP-26. New cultivar of rice (*Oryza sativa* L.) obtained by *in vitro* anther culture

ALAYN LP-26. Nuevo cultivar de arroz (*Oryza sativa* L.) obtenida por cultivo *in vitro* de anteras

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ABSTRACT: At Scientific and Technological Base Unit (UCTB) “Los Palacios” belonging to the National Institute of Agricultural Sciences (INCA), a new medium-cycle rice cultivar (named ALAYN LP-26) was obtained by biotechnological methods (*in vitro* cultivation of anthers from a selection of Eduar LP-21 cultivar), with excellent morphoagronomic characteristics in terms of agricultural yield (7.4 t ha⁻¹ in the low rainy season and 6.2 t ha⁻¹ in the rainy season), milling quality with 59 % of whole grains and resistance to pests (highly resistant to *Tagosodes orizicolus*), as well as good yield under conditions of low water supply. With this new cultivar, UCTB expects to favor rice producers in the peasant cooperative sector.

Key words: rice, biotechnology, adaptability.

RESUMEN: En la Unidad Científico Tecnológica de Base de los Palacios (UCTB), perteneciente al Instituto Nacional de Ciencias Agrícolas (INCA), se obtuvo un nuevo cultivar de arroz de ciclo medio (nominado ALAYN LP-26), obtenido mediante métodos biotecnológicos (cultivo *in vitro* de anteras de una selección del cultivar Eduar LP-21), con excelentes características morfoagronómicas, en cuanto a rendimiento agrícola (época poco lluviosa 7,4 t ha⁻¹ y en la lluviosa 6,2 t ha⁻¹), calidad molinera con un 59 % de granos enteros y su resistencia a plagas (muy resistente al *Tagosodes orizicolus*), así como un buen comportamiento a las condiciones de bajos suministros de agua. Con este nuevo cultivar la UCTB espera favorecer a los productores de arroz del sector cooperativo campesino.

Palabras clave: arroz, biotecnología, adaptabilidad.

INTRODUCTION

In the world, phylogenetic resources are considered very limited and constitute the basis for obtaining new cultivars with adaptability, high productivity and resistance to biotic and abiotic factors. Cuba has an organized program, with state support, which relies on the work carried out by institutions that make up the national system of phylogenetic resources.

In Cuba, rice is one of the main foods for population, due to the great consumption habit, reporting an annual per capita of 72 kg, well above almost all the countries of the American continent and close to the consumption patterns of some Asian countries, so Cuban state prioritizes the

development of the national program of plant breeding, which promotes research aimed at the conservation, use and enrichment of breeding programs, through the establishment and increase of germplasm collections of current economic importance species and to promote the development of new varieties or hybrids that contribute to achieving agricultural sustainability in the country. For this reason, genetic breeding programs are being developed, mainly aimed at obtaining rice cultivars for low water supply conditions with greater productive potential and resistance to the main pests.

The aim of the present work is to divulge a new medium cycle rice cultivar, obtained in Cuba, by biotechnological methods (*in vitro* anther culture) for conditions of low water supply for Cuban soils.

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DESCRIPTION

At Scientific and Technological Base Unit (UCTB) "Los Palacios", belonging to the National Institute of Agricultural Sciences (INCA), a genetic breeding program was carried out with the fundamental objective of diversifying the varietal composition of the rice crop. A new medium-cycle cultivar named ALAYN LP-26 was obtained through the use of biotechnological methods (*in vitro* culture of anthers of F2 plants), using the hybrid combination INCA LP-10/C4 153 and the evaluation of agronomic traits in superior regionalization trials.

Studies conducted in seven localities of the Cooperative Farmer sector, during six years, have shown a good performance of this cultivar, in relation to agricultural and

industrial yield, as well as its tolerance to main pests. Among its most important characteristics is its tolerance to low water supplies, where the following management was carried out, establishment of the lamina 15 days after germination of the rice, suspension of the entry 35 days after germination and replacement at the change of primordium, until after 50 % of flowering. In addition, it is worth noting that it has an excellent performance in waterlogged conditions.

Thirty-two descriptors were evaluated at different stages of the crop (vegetative stage, reproductive stage and ripening stage), including both qualitative and quantitative characteristics (Table 1), using the methodologies Standard Evaluation System for Rice (IRRI, 2002), CIAT Varietal Descriptors, 1993 and Varietal Description Form for Rice (Variety Registration and Seed Certification, 1998).

Table 1. Qualitative and quantitative characteristics.

Vigor	Very vigorous
Growth habit	Erect
Stem height (cm)	84
Leaf blade length (cm)	55
Leaf width (cm)	1,4
Predominant leaf color	Dark green
Ageing of leaf at flowering stage	Do not age
Pod color	Dark green
Flag leaf growth habit	Erect 0 - 30 degree
Predominant color of ligule	Whitish yellow
Ligule length (mm)	2.5 (none or very short)
Ligule shape	Cleft
Auricle color	Whitish white
Stigma color in spikelet	Yellowish white
Color of glumes	Whitish
Length of glumes (mm)	2,5
Leaf lamina corrugation	Absent
Color of lemma and palea	Light green
Panicle density	Intermediate
Panicle length (cm)	28,5
Panicle shape and erection	Equilateral pendant
Length of shelled grains (mm)	Long (10,36)
Width of shelled grains (mm)	Hemispherical (2,75)
Exersion of panicle	Emerged
Weight of 1000 unhulled kernels (g)	Very tall (30)
Full grains per panicle	125
Resistance to lodging	Resistant
Resistance to shattering	Resistant
Potential yield of paddy rice (t ha ⁻¹)	Dry-7.4 and rain-6.2
Brown rice % Whole rice	67
Percentage of whole grains	59
Fertile tiller m ⁻²	380
Resistance to <i>Pyricularia grisea</i>	Resistant
Resistance to <i>Tagosodes orizicolus</i>	Resistant