



'INIVIT MC-2012': new cultivar of *Colocasia* taro for Cuban agriculture

'INIVIT MC-2012': nuevo cultivar de malanga *Colocasia* para la agricultura cubana

Víctor R. Medero-Vega*, Sergio Rodríguez-Morales, Milagros Basail-Pérez, Arletys Santos-Pino

Instituto de Investigaciones de Viandas Tropicales (INIVIT), Apdo. 6, Santo Domingo, CP 53 000, Villa Clara, Cuba.

ABSTRACT: Obtaining new cultivars of *Colocasia* taro are a priority of the Genetic Improvement Program of the crop. The selection of plants and their evaluation with the participation of the producers has become one of the main ways to achieve this objective. For this reason, in the Plant Biotechnology laboratory of INIVIT, *in vitro* cloning was carried out by tissue culture techniques of a *Colocasia* taro plant selected as a possible mutant, through participatory research, within a commercial plantation of the cultivar 'Cameroon 14' at the "Horquita" Agricultural Company, located in Abreus municipality, Cienfuegos province. The plants produced *in vitro* were planted under field conditions and the evaluation of the morphoagronomic characters was carried out by applying the descriptors of this species. As a result, it was determined that the plants multiplied *in vitro* presented different characteristics to the donor when evaluated using the established descriptors and, therefore, it turned out to be a new cultivar, which was registered as 'INIVIT MC-2012' in the Commercial Variety Registry of the Ministry of Agriculture. In the harvest carried out 10 months after planting, this genetic material reached a yield of 25 t ha⁻¹, was less affected by dry rot and showed good culinary quality in corms and cormels.

Key words: tissue culture, participatory research, genetic improvement.

RESUMEN: La obtención de nuevos cultivares de malanga *Colocasia* constituyen una prioridad del Programa de Mejoramiento Genético del cultivo. La selección de plantas y su evaluación con la participación de los productores se ha convertido en una de las vías principales para lograr este objetivo. Por tal motivo, en el laboratorio de Biotecnología Vegetal del INIVIT se realizó la clonación *in vitro* por técnicas de cultivo de tejidos de una planta de malanga *Colocasia* seleccionada como posible mutante, mediante investigación participativa, dentro de una plantación comercial del cultivar 'Camerún 14' en la Empresa Agropecuaria "Horquita", ubicada en el municipio Abreus, provincia Cienfuegos. Las plantas producidas *in vitro* fueron plantadas en condiciones de campo y la evaluación de los caracteres morfoagronómicos se realizó mediante la aplicación de los descriptores de esta especie. Como resultado se determinó que las plantas multiplicadas *in vitro* presentaron características diferentes al donante al ser evaluadas mediante los descriptores establecidos y, por ello, resultó ser un nuevo cultivar, que se inscribió como 'INIVIT MC-2012' en el Registro de Variedades Comerciales del Ministerio de la Agricultura. En la cosecha realizada a los 10 meses de la plantación, este material genético alcanzó un rendimiento de 25 t ha⁻¹, fue menos afectado por pudriciones secas y mostró buena calidad culinaria en cormos y cormelos.

Palabras clave: cultivo de tejidos, investigación participativa, mejoramiento genético.

INTRODUCTION

In Cuba, taro crop plays a fundamental role in human nutrition motivated by its consumption habits for children, the elderly and the sick, but its poor stability in the market makes the Ministry of Agriculture draw lines of work for the obtaining new cultivars and expanding the areas dedicated to the cultivation of this species in the country.

The Tropical Viand Research Institute (INIVIT) is the institution responsible for the Genetic Improvement

Program for the taro cultivation of both genders (*Colocasia esculenta* (L.) Schott and *Xanthosoma* spp.). On the other hand, the INIVIT Biotechnology laboratory has been working on taro tissue culture since 1989 and protocols have been established for micropropagation by organogenesis of commercial and promising cultivars.

To obtain the cultivar, the objective was to multiply the selected plant as a possible spontaneous mutant in the field *in vitro* and to carry out the morphoagronomic characterization with respect to the donor cultivar.

*Author for correspondence: vicedir.biotech@inivit.cu

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ORIGIN

The new *Colocasia* taro cultivar 'INIVIT MC-2012' was obtained by individual clonal selection of the clone 'Cameroon-14' plant selected by participatory research and multiplied in vitro using the protocol adjusted for the micropropagation of the tissue culture laboratory of the INIVIT.

The new genetic material differs from the donor clone because it has a light green leaf blade, a light green petiole, a reddish-green limb-petiole insertion, a larger central corm and a higher potential yield (36 t ha⁻¹). Under production conditions, it reached a yield of 25 t ha⁻¹. It has good culinary quality and was less affected by dry rot. In addition, it complements the clonal structure of the crop and it has presented a good agronomic response in different edaphoclimatic conditions in the country.

DESCRIPTION OF CULTIVAR

Height: 1.10 m-2.30 m Foil margin color: green

Foil surface appearance: not glossy Leaf color on the underside: light green

Color of the limb/petiole insertion point on the upper surface: green and some leaves with purple spots Petiole color: green

Petiole/corm insertion point color: white Root color: cream

Corm buds color: pink Cormels pulp color: cream

Corms shape: rounded Cormels shape: rounded

Number of cormels: between 5 and 10 Harvest cycle: from 9 months

Altura: 1.10 m-2.30 m

Due to the new genotype qualities, its response in the field and acceptance by the producers, explants were produced in the INIVIT Plant Biotechnology laboratory for the transfer of the micropropagation methodology to the National Network of Biofactories. It belongs to the Production Company and Seed Marketer of the Ministry of Agriculture in Cuba, with the aim of producing planting material of high genetic and phytosanitary quality. In addition, with the introduction of this cultivar in the productive sphere, the clonal diversification of the *Colocasia* genus was favored, the yield potential of the culture was increased and it was shown that with the application of tissue culture techniques the time to obtain a new cultivar, (Photo 1).



Photo 1. 'INIVIT MC-2012'.