



“Anaranjado INIVIT”: a new biofortified sweet potato (*Ipomoea batatas* [L.] Lam) cultivar

“Anaranjado INIVIT”: nuevo cultivar de boniato (*Ipomoea batatas* [L.] Lam.) biofortificado

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ABSTRACT: 'Anaranjado INIVIT', a new biofortified sweet potato (*Ipomoea batatas* [L.] Lam) cultivar developed by INIVIT from the cross between 'Sushu-29' and 'Español', is presented. It stands out for its high commercial yield (29.75 t ha⁻¹), phenotypic stability across planting seasons, and intense orange flesh associated with high carotene content. With a 120-day cycle and uniform elliptical roots, it offers a competitive alternative for growers, outperforming the control 'INIVIT BS-16'. Its stable adaptation was confirmed by genotype-environment interaction analysis (AMMI).

Key words: biofortification, carotenoids, phenotypic stability, plant breeding, yield.

RESUMEN: Se presenta 'Anaranjado INIVIT', nuevo cultivar de boniato (*Ipomoea batatas* [L.] Lam.) biofortificado, obtenido por el INIVIT mediante cruzamiento dirigido entre los progenitores 'Sushu-29' y 'Español'. Este genotipo se distingue por su alto rendimiento comercial (29.75 t ha⁻¹), estabilidad fenotípica en las dos épocas de siembra y pulpa de color anaranjado intenso, asociada a alto contenido de carotenos. Con ciclo de 120 días y raíces de forma elíptica uniforme, constituye una alternativa competitiva para productores, superando al testigo 'INIVIT BS-16'. Su adaptación estable fue confirmada mediante análisis de interacción genotipo-ambiente (AMMI).

Palabras clave: biofortificación, carotenos, estabilidad fenotípica, mejoramiento genético, rendimiento.

INTRODUCTION

Sweet potato (*Ipomoea batatas* [L.] Lam) is a strategic crop for food security in Cuba. Biofortification, through genetic improvement, allows the development of varieties with high nutritional value and productivity. Although the INIVIT breeding program has made progress, the

availability of orange-fleshed cultivars (rich in carotenoids) with high yield and stable adaptability remains limited. The objective of this work is to present the new biofortified cultivar 'Anaranjado INIVIT', obtained through controlled crossing, which combines high productivity, phenotypic stability, and superior nutritional quality, as a competitive alternative for Cuban farmers.

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Received: 21/12/2025

Accepted: 03/03/2026

Conflict of interest: Authors declare no conflict of interest.

Author's contribution: **Conceptualization:** Dania Rodríguez, Alfredo Morales. **Investigation:** Dania Rodríguez, Alfredo Morales, Yaselis Guillén. **Methodology:** Dania Rodríguez, Alfredo Morales. **Supervision:** Leandro C. Valdés Hernández. **Writing - original draft:** Dania Rodríguez. **Writing - review & editing:** Alfredo Morales, Dania Rodríguez, Leandro C. Valdés Hernández. **Data curation:** Yaselis Guillén, Danay Rodríguez Vázquez.

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ORIGIN AND DESCRIPTION

The cultivar 'Anaranjado INIVIT' was obtained in 2020 through the biparental cross 'Sushu-29' × 'Español' at INIVIT (Figure 1). During five selection cycles (2020-2025) under field conditions, agronomic traits and flesh quality were evaluated. To confirm its phenotypic and productive stability, multi-environment trials were conducted in eight locations in Cuba (2024-2025), and the data were analyzed using the AMMI model (Additive Main Effects and Multiplicative Interaction Analysis). The results demonstrated high stability and wide adaptation of the

genotype, consistently outperforming the control 'INIVIT BS-16' in both planting seasons (Figure 2) (Table 1).

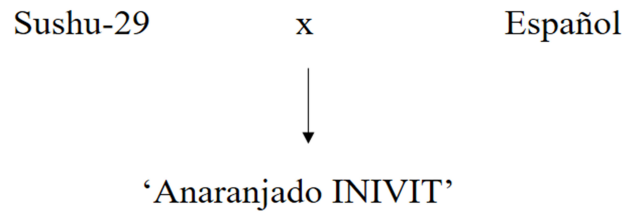


Figure 1. Pedigree of the sweet potato cultivar 'Anaranjado INIVIT'

Table 1. Agronomic and quality traits of the sweet potato cultivar 'Anaranjado INIVIT'

Characteristic	'Anaranjado INIVIT'	Method/Unit
Commercial yield	29.75 ± 2.3	t ha ⁻¹
Number of commercial roots per plant	3.7 (range 3-5)	N°
Average commercial root weight	320 (range 250-400)	g
Root dry matter	30.2 ± 1.5	%
β-carotene in fresh flesh	520 ± 35	ppm (mg kg ⁻¹)
Total soluble solids (°Brix)	8.5 ± 0.8	°Brix
Phenotypic stability (WAASB)	1.1	Stability index (lower = more stable)
Foliage yield	34.24 ± 3.1	t ha ⁻¹
Vegetative cycle	120	days
Incidence of <i>Cylas</i> spp.	< 8	%



Figure 2. Tuberos roots and foliage of the 'Anaranjado INIVIT' sweet potato cultivar