



## Comprehensive Agro-morphological Assessment of the Puerto Rican Cassava (*Manihot esculenta*) Germplasm



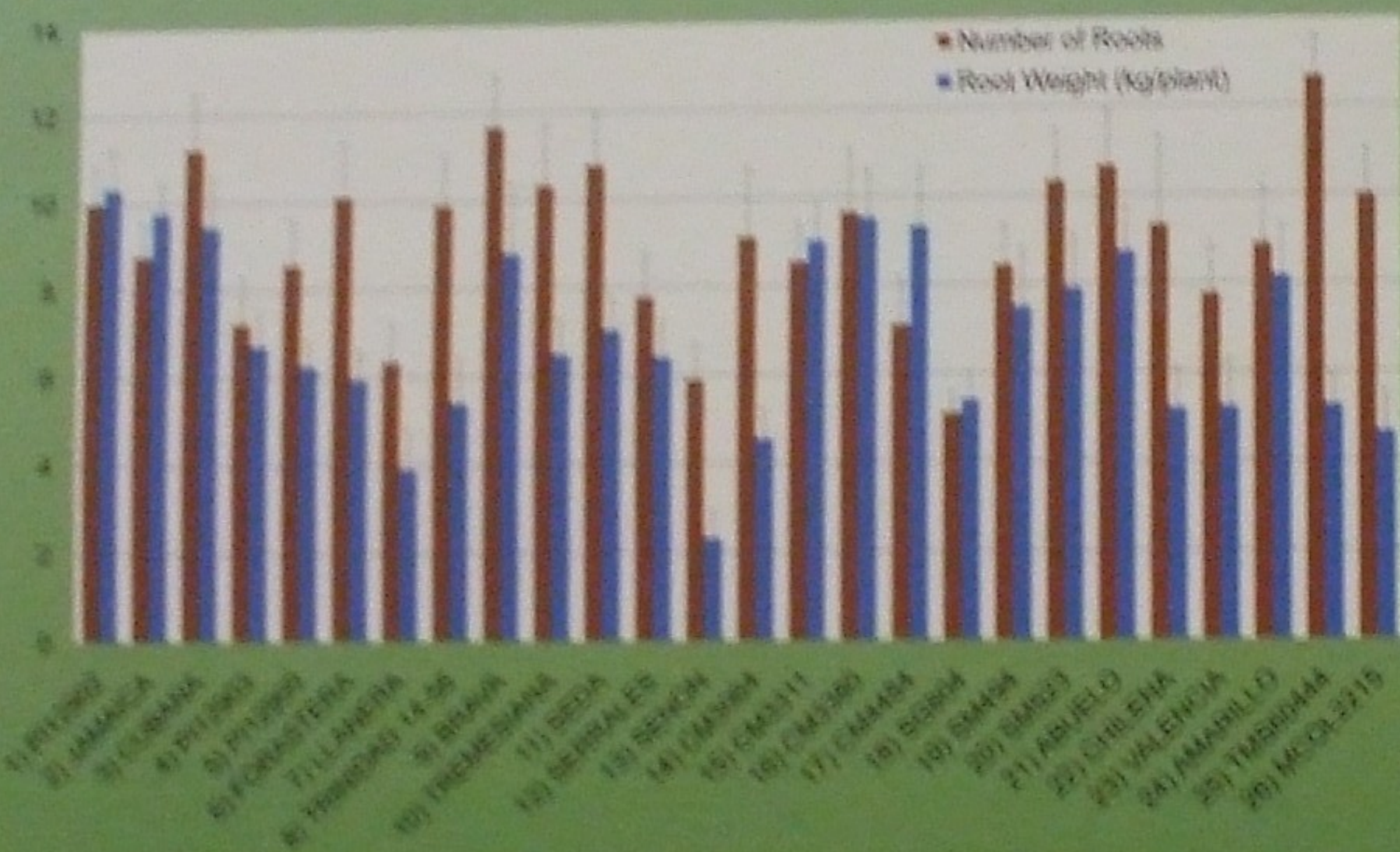
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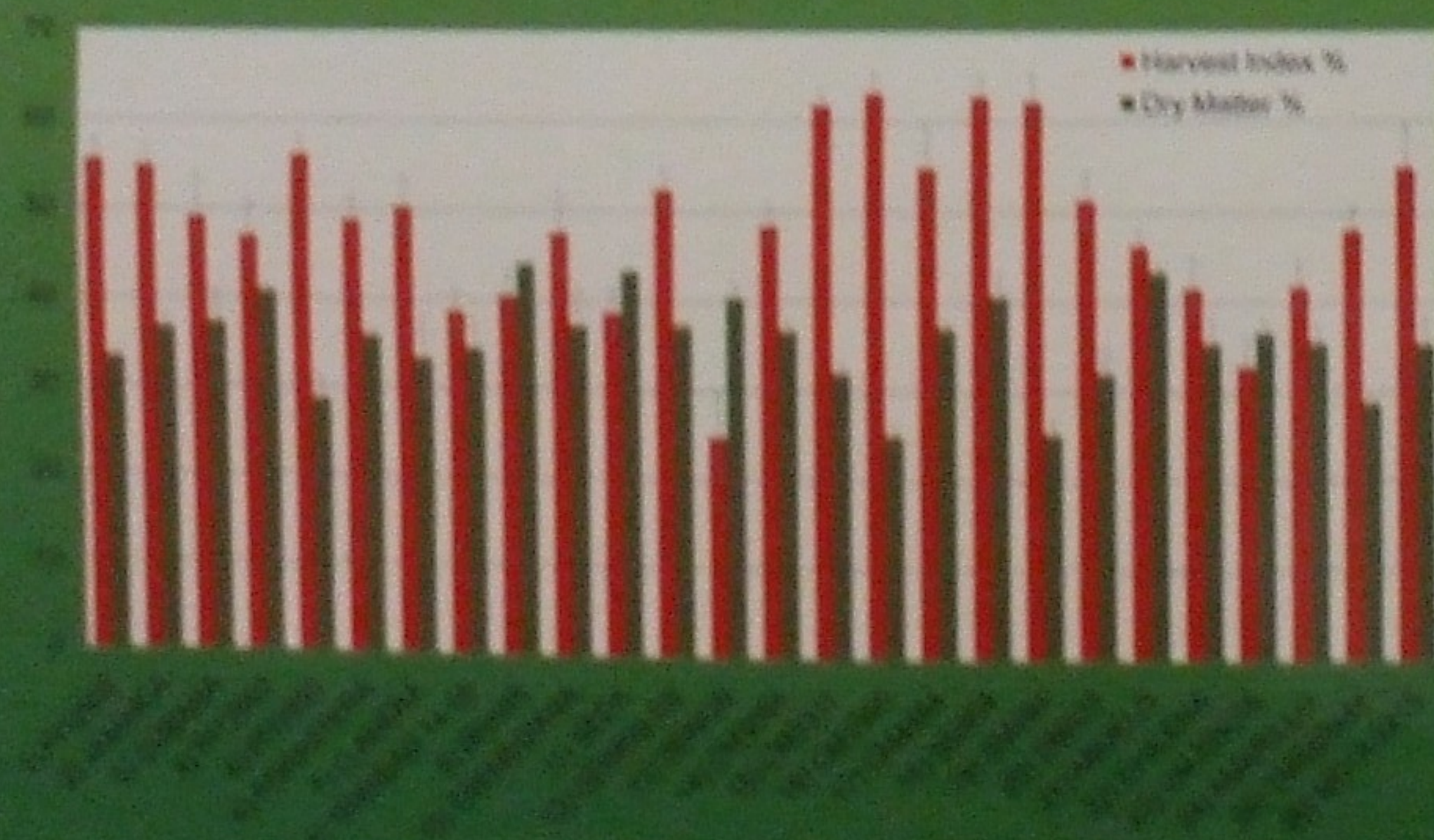
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Historically, cassava, *Manihot esculenta* Crantz, has played an important role on the world's agriculture. This starchy root is grown especially in the lowlands of developing countries, where it is a staple food of some of the most hard-pressed populations in Africa. The cassava collection in Puerto Rico consists of 26 cultivars, seven of them were introduced to Puerto Rico by the Tropical Agriculture Research Station (TARS) in 1994 from the International Center for Tropical Agriculture (CIAT), Cali, Colombia. Another 16 accessions have been in the cassava collections of the Agriculture Experimental Stations of Puerto Rico for approximately 26 years. In the past 4 year, three more accessions have been introduced from CIAT. We conducted a thorough agronomical and morphological assessment of these accessions in the field of the Isabela Agricultural Research station in Northeastern Puerto Rico. During the 11 month of growth morphological characteristics such as plant height, stem-petiole-leaf color, branching number, and petiole orientation were assessed. Root morphological descriptors were also noted at harvest. Due to space limitation some of those data are not shown here. **Data shown here are the agronomic properties at harvest** such as below ground mass and number of roots (Fig. 1), dry matter content and harvest index (Fig. 2), root and leaf cyanogen content (Fig. 3), post harvest deterioration (Fig. 4) and yield (Fig.5).

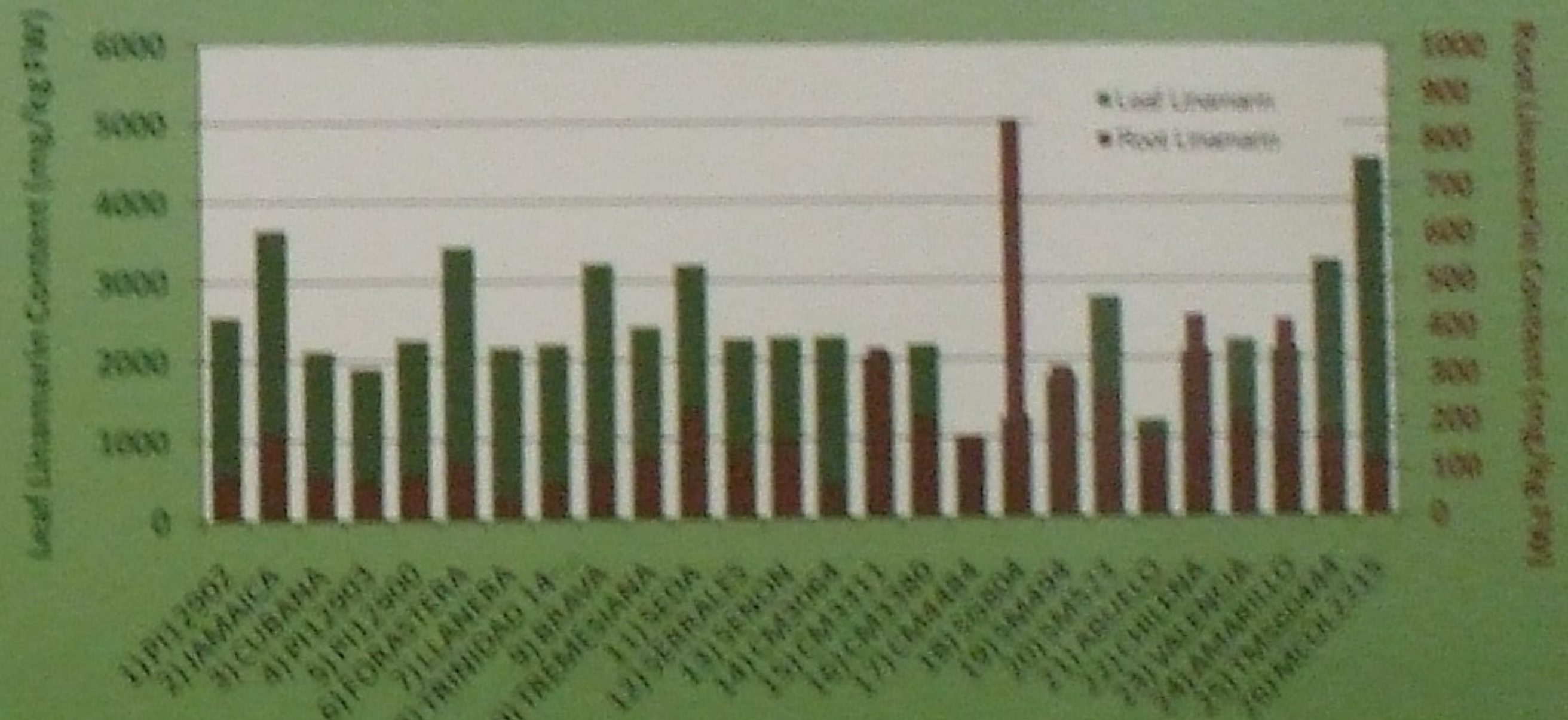
**Figure 1:** The highest number of roots were observed with TMS60444 and Brava while the highest yield per plant was PI12902 and Jamaica



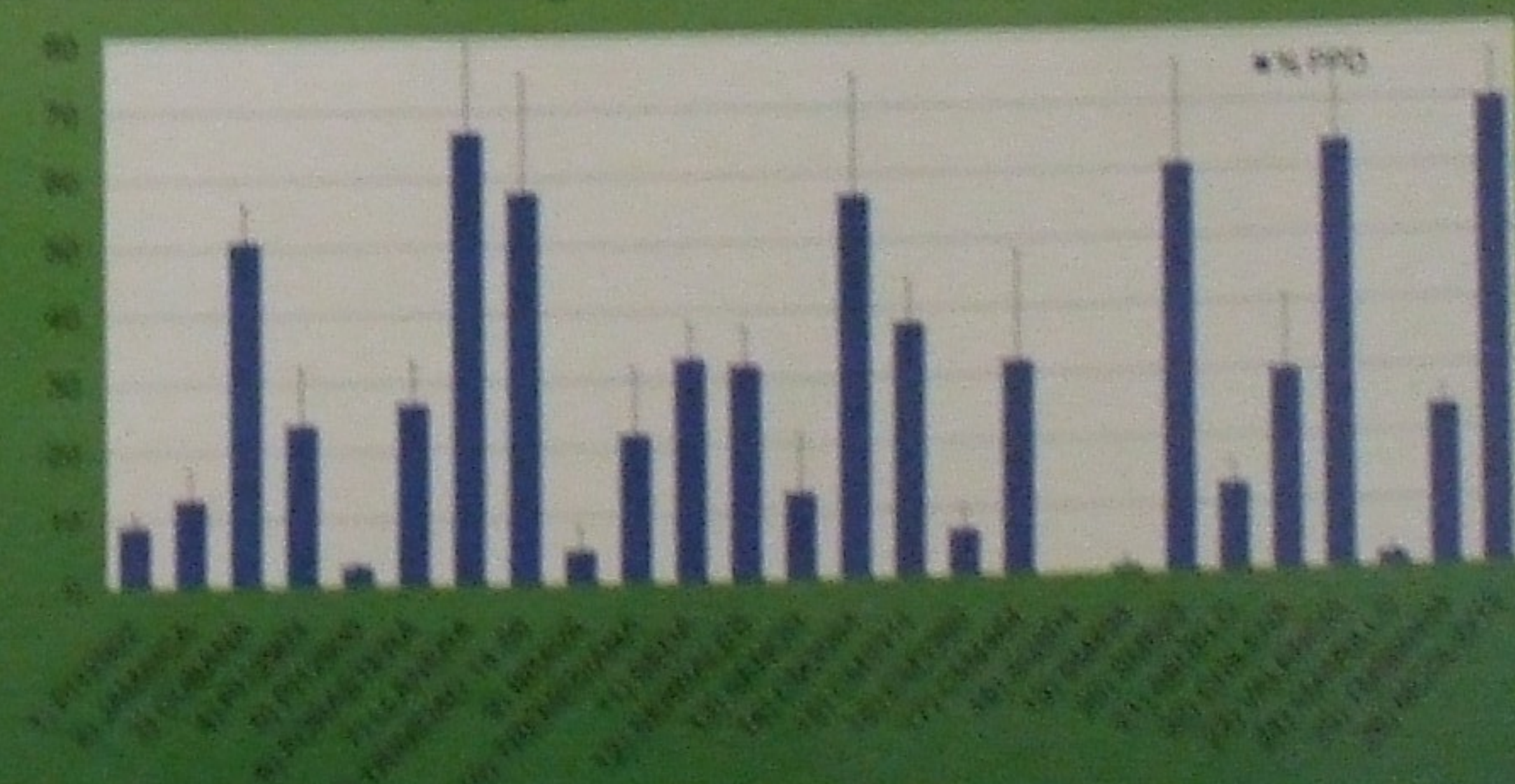
**Figure 2:** Higher harvest index (root weight/total plant weight) was seen with CM3311, CM4484, SG804 and SM494 while the average was 49%. Highest dry matter content was measured with Brava, Seda and Abueo while the average was 35.7%. Dry matter content was measured using an oven at 80°C for 24 hours.



**Figure 3:** The highest root cyanogen content was found in SG804. Root linamarin content was measured using UPLC-TOF system. Accordingly, 19 of the varieties tested were designated as 'bitter' (>100mg/kg FW) while 7 varieties were designated as 'sweet' (<100mg/kg FW)



**Figure 4:** The lowest PPD was observed with SM494 and Amarillo roots. PPD was measured visually using a scale.



**Figure 5:** Highest yield was PI12902 (46MT/ha) and Jamaica (43 MT/ha) while Serrales, the most commercial variety in Puerto Rico was 28.4 MT/ha.

