

MORPHOLOGICAL AND CHEMICAL CHARACTERIZATION AND ASSESSMENT OF GENETIC DIVERSITY OF NATIVE YAM (*DIOSCOREA* SP.) GERMPLASM COLLECTIONS CONSERVED AT THE NPGRL

**Maria Lea H. Villavicencio¹, Antonio S. Laurena²
Darel Kenth S. Antesco³ and Erin Raven T. Mojica⁴**

University Researcher II,

¹National Plant Genetic Resources Laboratory (NPGRL), Institute of Plant Breeding (IPB), College of
Agriculture and Food Science, U.P. Los Baños, Philippines

²Biochem Laboratory, Institute of Plant Breeding, College of Agriculture and Food Science

³Institute of Crop and Science, College of Agriculture and Food Science, U.P. Los Baños, Philippines

⁴19 A Bonifacio St., Bgy. 5, Mendez, Cavite 4121

mhvillavicencio@up.edu.ph

ABSTRACT

The germplasm collections of yam at the NPGRL, IPB were characterized and evaluated to assess the diversity of the collections, facilitate selection and identify the potential germplasm for enhanced utilization, improved nutrition and sustained source of food or for livelihood. Based on the 31 accessions characterized, 17 qualitative characters exhibited high diversity index values ranging from 0.67-0.99 with texture of flesh giving the highest diversity among the characters. The sizes and dimensions of the tubers similarly obtained high diversity indices. Further evaluation of the nutraceutical properties of the 40 accessions, consisting of four species, *D. alata*, *D. bulbifera*, *D. hispida*, and *D. esculenta*, showed that *D. esculenta* tubers have the highest % crude fat while *D. alata* have the highest % total ash value, compared to other three native yam species. *D. bulbifera* and *D. hispida* on the other hand have the highest % protein per sample. *D. esculenta* and *D. bulbifera* have higher crude fiber contents compared to *D. alata*. Two *D. alata* accessions have high total phenolic and anthocyanin contents, while one *D. esculenta* collection showed high total phenolic and flavonoid contents. Highest values of antioxidant properties can be observed on PHL 4725 (tugui) and GB 53193 (ubi). Correlation of antioxidant property with anthocyanin, total phenolic and flavonoid contents formed distinct groupings that identified six (6) promising collections of yam based on functional properties. These accessions can be selected as parents for crop improvement programs.

Keywords: Yam, *Dioscorea* species, germplasm conservation, genetic diversity, nutraceutical property